Archaeology and History of White Walnut Creek, Perry County, Illinois

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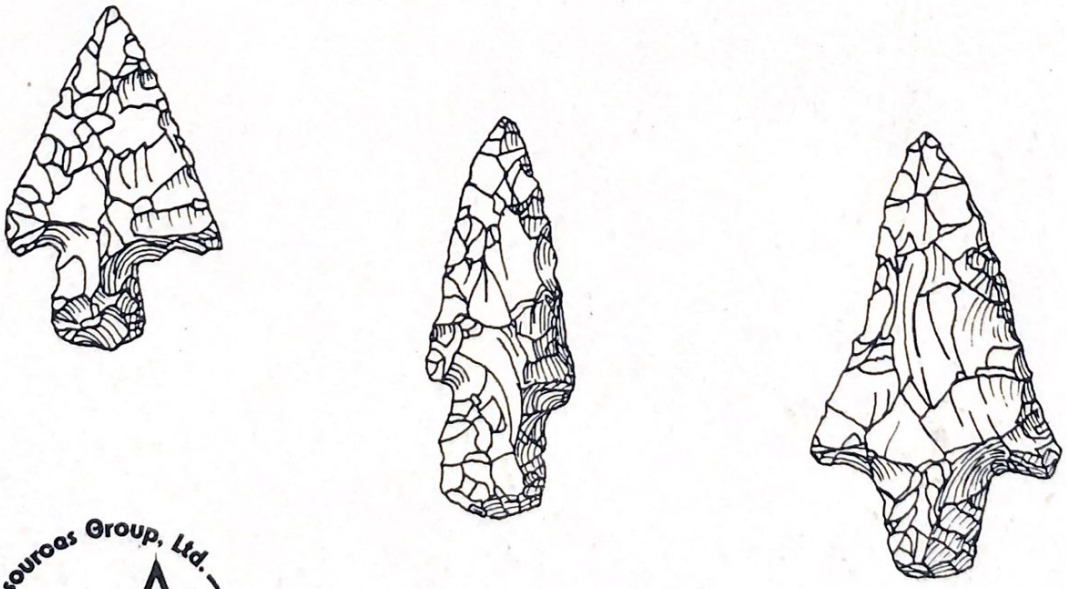

American Resources Group, Ltd.

PRESERVATION SERIES 1

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To Bill
Mike McKerney

THE ARCHAEOLOGY AND HISTORY OF WHITE WALNUT CREEK PERRY COUNTY, ILLINOIS

Phase I Survey and Phase II Test Excavations
at Deep Strip #3, Burning Star Mine #2,
Consolidation Coal Company

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PREFACE

An archaeological survey and site testing program for approximately 2,625 acres (1,050 ha) at Deep Strip #3, Burning Star Mine #2, Perry County, Illinois, is presented. Sixty-one archaeological sites were located; 26 were tested. It is recommended that excavation, analysis, and interpretation of cultural remains at five sites be conducted as a means of mitigating the adverse effects of surface mining on the significant cultural resources. In addition, it is recommended that no further research or mitigation is required at the remaining 56 archaeological sites recorded in the mine area and that construction of the diversion channel and surface mining activity at those specified locations will not adversely effect significant cultural resources.

This report is the first volume in the Preservation Series of American Resources Group, Ltd. It presents the results of an archaeological and historical survey conducted by American Resources Group, Ltd., for the Midwest Division of Consolidation Coal Company. The volume is adapted from a draft report previously submitted to the Illinois State Historic Preservation Office for review and compliance with state and federal surface mining regulations in conjunction with mining activities at Burning Star Mine #2, Perry County, Illinois. Future volumes in the series will present the results of ongoing survey and mitigation activities by American Resources Group, Ltd., for Consolidation Coal Company as well as other preservation and cultural resources management topics. The series is intended for both professionals and the interested lay person.

We would like to thank Vic Ordija, Paul Schirmer, Ed Johnson, Dennis Mayhan, Glenn Phillips, Linda Duetcher, Ed Kopshever, Amy Ruffing, Debbie Medlin, Art Epplin, and many other employees of Consolidation Coal Company for their fine cooperation and support. Thanks also to Charles Curt, Western Auto Store, Pinckneyville; and to many other people in Pinckneyville and the surrounding area for their assistance throughout the project.

Several specialists consulted and authored sections of the report: David Austin, history; Lee Elliot and John Voigt, presettlement vegetation; M. Colleen Hamilton and Terry J. Powell, historic archaeology; and Stanley E. Harris, Jr., geology. Their contributions to this volume and future research in the till plains are significant.

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INTRODUCTION

Project Description

The following report presents the results of a cultural resources survey and assessment at Deep Strip #3, Burning Star Mine #2, Perry County, Illinois. This assessment is part of a larger cultural resources assessment project which also includes similar research at the Northfield, Burning Star Mine #4, being conducted for Consolidation Coal Company, Midwestern Region, by American Resources Group, Ltd., Carbondale, Illinois.

Deep Strip #3 is located along White Walnut Creek, 2.5 mi northwest of Pinckneyville, Illinois (Map 1). It is a northward extension of present mining operations just north of highway 154, east of Pinckneyville. Future mining activities will eventually impact the entire area examined for this cultural resources assessment.

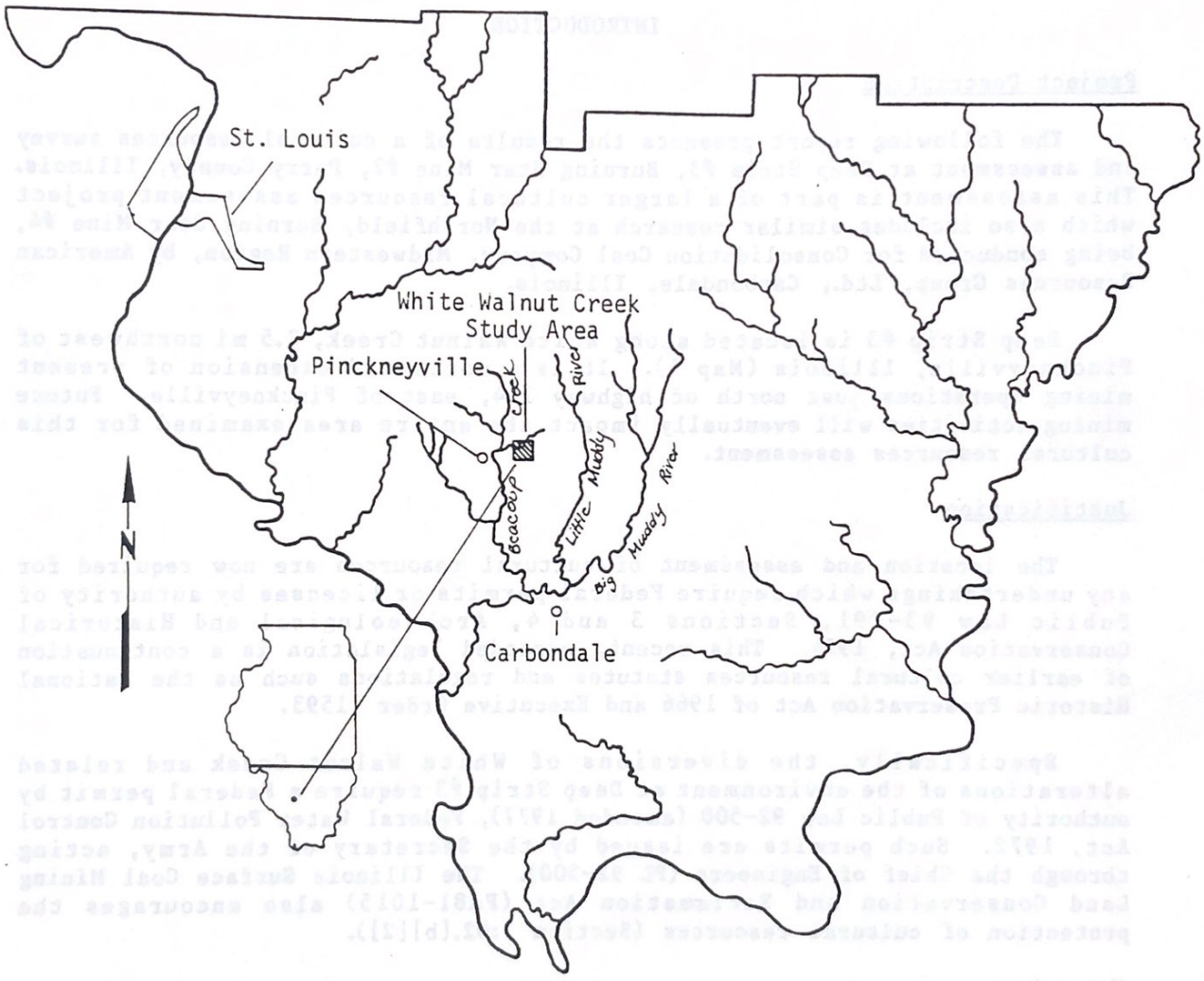
Justification

The location and assessment of cultural resources are now required for any undertakings which require Federal permits or licenses by authority of Public Law 93-291, Sections 3 and 4, Archaeological and Historical Conservation Act, 1974. This recent, expanded legislation is a continuation of earlier cultural resources statutes and regulations such as the National Historic Preservation Act of 1966 and Executive Order 11593.

Specifically, the diversions of White Walnut Creek and related alterations of the environment at Deep Strip #3 require a Federal permit by authority of Public Law 92-500 (amended 1977), Federal Water Pollution Control Act, 1972. Such permits are issued by the Secretary of the Army, acting through the Chief of Engineers (PL 92-500). The Illinois Surface Coal Mining Land Conservation and Reclamation Act (PA81-1015) also encourages the protection of cultural resources (Section 7:02.[b][2]).

Objectives

There are three interrelated considerations which provide the methodological and operational framework for this assessment: (1) the amount and level of previous archaeological research in the immediate area; (2) the need to generate basic environmental, geological, and archaeological background data which can be utilized and expanded upon in future mitigation efforts; and (3) conduct the assessment in such a way that preservation of significant archaeological resources will be achieved without impeding mining activities.



MAP 1

White Walnut Creek
Project Location

There has been no previous archaeological research in the immediate vicinity of White Walnut Creek or along Beaucoup Creek. Therefore, our approach focused heavily on observation, description, and the accumulation of cultural and environmental data which could be used for future comparative studies, especially with data being gathered concurrently at the Northfield along upper Galum Creek. As such, this approach becomes the basis for the formulation of research considerations for future endeavors.

Surface mining was already in progress in a portion of the area. In order to keep ahead of mining activities, the location (Phase I) and testing (Phase II) of sites were combined into a single operation. This approach necessitated maintaining daily and weekly contact with the Environmental Section and engineers of Consolidation Coal Company, working some overtime to stay on schedule, and making changes in scheduling, sampling strategies, or other methodologies as changing mining plans or schedules required.

MAP 1

White Walnut Creek
Project Location

ENVIRONMENTAL CONTEXT

Introduction

An understanding of the biophysical environment of an area is a prerequisite to an understanding of that area's culture history. The variety and abundance of natural resources available for exploitation combined with physiographic topographic and hydrographic variables of an area are key factors in the human decision-making processes regarding how an area will be utilized. Coe and Flannery (1964:650) note that "primitive peoples rarely adapt to whole environmental zones" but rather exploit resources that may be found in several types of environments or microenvironments. Such resource utilization includes not only food procurement and processing but also of plant, animal, and mineral resources for a variety of activities including tool production, ceremonial use, and shelter construction.

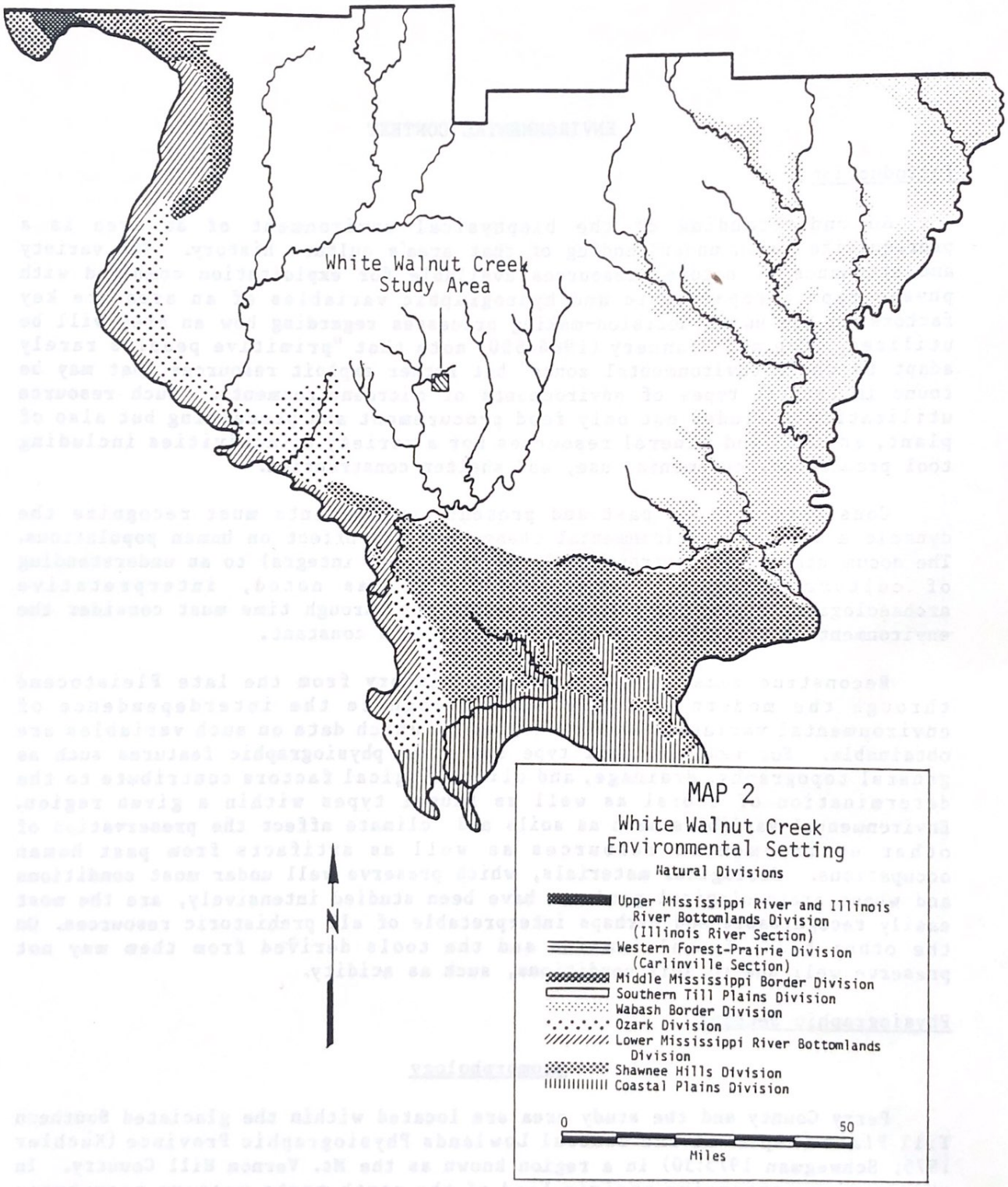
Considerations of past and present environments must recognize the dynamic aspects of environmental change and its effect on human populations. The documentation of environmental change becomes integral to an understanding of culture change. As Butzer (1977:v) has noted, interpretative archaeological models for cultural adaptations through time must consider the environment as a critical variable rather than a constant.

Reconstructions of environmental history from the late Pleistocene through the modern era also must recognize the interdependence of environmental variables and the degree to which data on such variables are obtainable. For example, soil type and other physiographic features such as general topography, drainage, and climatological factors contribute to the determination of floral as well as faunal types within a given region. Environmental variables such as soils and climate affect the preservation of other environmental resources as well as artifacts from past human occupations. Geological materials, which preserve well under most conditions and whose archaeological products have been studied intensively, are the most easily recognizable and perhaps interpretable of all prehistoric resources. On the other hand, faunal remains and the tools derived from them may not preserve well due to soil conditions, such as acidity.

Physiographic Setting

Geomorphology

Perry County and the study area are located within the glaciated Southern Till Plain (Map 2) of the Central Lowlands Physiographic Province (Küchler 1975; Schwegman 1975:30) in a region known as the Mt. Vernon Hill Country. In this region, extensive prairie land of the north meets western mesophytic forests. Leighton et al. (1948:27) describe the Mt. Vernon Hill Country as


White Walnut Creek
Study Area
N
MAP 2
White Walnut Creek
Environmental Setting
Natural Divisions
Upper Mississippi River and Illinois River Bottomlands Division (Illinois River Section)
Western Forest-Prairie Division (Carlinville Section)
Middle Mississippi Border Division
Southern Till Plains Division
Wabash Border Division
Ozark Division
Lower Mississippi River Bottomlands Division
Shawnee Hills Division
Coastal Plains Division
0
50
Miles

characterized by "mature topography of low relief with restricted upland prairies and broad alluvial valleys."

The topography of the White Walnut Creek area, as shown by the contours of the Pyatts and Todds Mill 7.5′ USGS quadrangle maps, indicates an area of modest low relief. The upland has a moderately even elevation, ranging between 480 and 520 ft. Most of the relief is due to dissection of the uplands by major streams and their tributaries. Some scattered ridges and hills rise above the general surface. The region was generally wooded at time of settlement, particularly along the valleys; prairie grasslands occupied the broader upland flats.

White Walnut Creek is only about 7 mi long with a drainage area of approximately 150 mi^2. It rises on the flat upland just west of Tamaroa at 520 ft above MSL and flows west-southwest to join Beaucoup Creek just northeast of Pinckneyville at an elevation of 410 ft. The width of the drainage basin is only about 3 mi, bounded on the north and south by narrow flat uplands. Tributaries are short and ephemeral, closely spaced, with steep gradients. Ridges between the tributaries extend from the upland to the main valley margin, producing high bluffs. The valley floor is broad and flat with a very gentle gradient, especially in the lower portion. Seasonal stream discharge varies considerably. Generally, high discharge occurs in the late winter and spring, while little or no appreciable discharge occurs in summer and fall. Tributary stream flow is limited to periods of surface runoff and groundwater seepage.

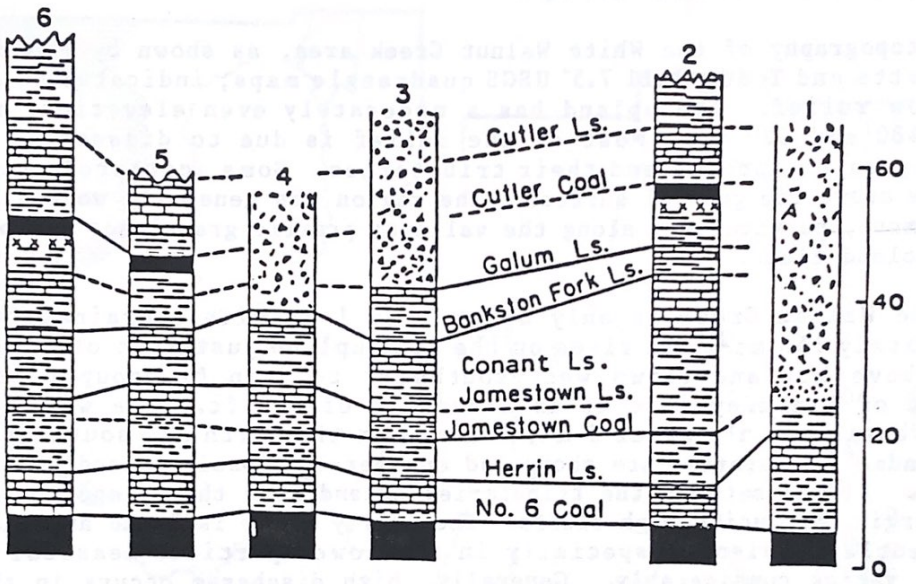
The loess is well sorted silt, 4 to 5 ft thick beneath the upland. Mass wasting and running water erosion have removed the loess from the steeper slopes; colluvial material commonly forms fans or aprons on the lower slopes. The alluvial materials composing the floodplains of White Walnut and Beaucoup creeks are dominantly silt. They are derived largely from the loess but also may originate in glacial till.

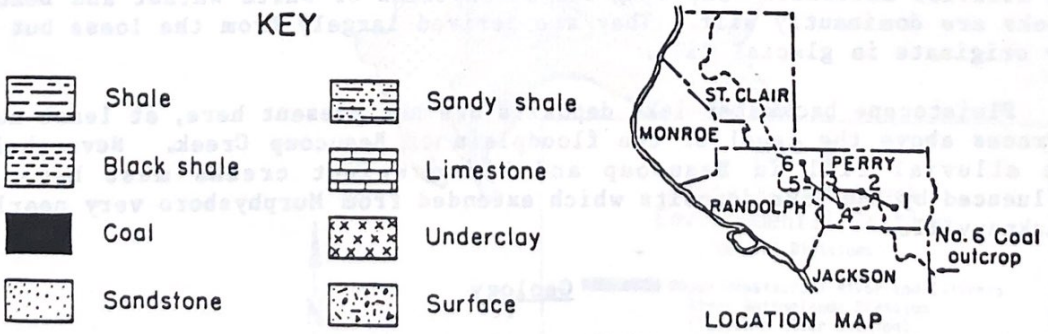
Pleistocene backwater lake deposits are not present here, at least not as terraces above the level of the floodplain of Beaucoup Creek. Nevertheless, the alluvial fill in Beaucoup and White Walnut creeks must have been influenced by the lake deposits which extended from Murphysboro very nearly to Pinckneyville.

Geology

Bedrock, rarely exposed naturally in the White Walnut Creek area, consists of cyclic interbeds of shales, limestones, and sandstones, classified as the Carbondale Formation of Pennsylvanian Age (Figure 1). The bedrock section above the commercial coals is well known because of the extensive strip mining in the region. The coal does not have significant natural exposures and is not known to have been used for fuel by aboriginal residents.

These sedimentary rocks are of marine and deltaic origin deposited in the Paleozoic inland seas of the Illinois Basin. The Basin was structurally a negative area, accumulating more than 14,000 ft of sediments during the long period of gradual subsidence. The Carbondale Formation was not the last deposited. Probably 4,000 to 5,000 ft of younger sediments once overlay them.





Cross section showing the strata overlying No. 6 Coal.

Figure 1. Geologic Column of Perry and Randolph Counties, Illinois

At the end of the Paleozoic era, 255 million years ago, the central part of the continent was warped slowly upward, and the Paleozoic seas retreated. Physical relief was never great with uplift with erosion very nearly keeping pace. During this period, much of the bedrock topography in southwestern Illinois developed. This period, which lasted until the onset of the Pleistocene glaciations, is characterized as a period of extreme dissection, which left rivers, such as the Marys and Big Muddy, with deep bedrock valleys. Although these valleys are filled today with Pleistocene deposits, the modern streams often are superimposed over their original deep bedrock valleys. These processes have resulted in a post-Pennsylvanian/pre-Pleistocene contact surface for Illinois' Pennsylvanian system (Willman et al. 1975:165).

Prior to glaciation, deep soils were formed on the bedrock surface. When glacial ice moved through an area, surface materials and large parts of bedrock were incorporated into the ice. This material, collectively known as glacial drift, was deposited on the landscape as the glaciers advanced and retreated. Glacial erosion and deposition greatly modified the preglacial surface morphology and is directly responsible for much of the present topography of Illinois.

The Kansan stage glaciation was the first major advance of glacial ice into Illinois. The extent of the Kansan age deposits in southern Illinois, known as the Banner Formation, is not well documented as these deposits are covered by the later Illinoian deposits (Johnson 1964; Pibskin and Bergstrom 1967).

In the Pinckneyville area, the main glacial deposits are related to the Illinoian glaciation. Although covered by till deposits and some sand and gravel, the preglacial valley system apparently was not obliterated completely. The Illinoian Till Plain was originally quite flat. The new surface streams gradually incised the plain as tributaries extended themselves, and the post-Illinoian valleys appear to be superimposed on their predecessors. Rather extensive even uplands still survive.

During the last glacial stage, Wisconsinan meltwaters carried vast quantities of sediment down the main waterways, including the Kaskaskia and Wabash rivers. Beaucoup Creek and the Big Muddy Basin did not receive this outwash. Instead, backwaters from the sediment fill in the Mississippi Valley created extensive shallow lakes in the lower portion of these valleys.

The sediments of old Lake Muddy form terrace flats above the level of the floodplain of Beaucoup Creek to the vicinity of state highway 152 east of Pyatts where the terrace and floodplain merge. Holocene alluvial deposits occupy the bottomland from there northward. The floodplain is a mile or more in width. Even today there are oxbow lakes and swampy areas; no doubt these were more common in the past. Thus, in the vicinity of the mouth of White Walnut Creek, wet bottomlands must have been present throughout the last 10,000 years or more but probably not an open expanse of lake. The lake itself probably did not reach upstream to the White Walnut area, but alluviation resulted in broad valley flats. Simultaneously, Holocene loess silts were deposited across the uplands and into the lakes. These silts were derived from the outwash deposits of the major valleys. During the summer melting season, vast quantities of water and sediment were transported; but,

during the winter freeze, the sediment load was left spread across the broad flooplains. Now bare and without vegetative cover, the loose sand and silt were subject to wind erosion; the lighter silt fraction was carried out of the valley bottom.

Probably the earliest human inhabitants of the region experienced these events of the waning glaciers. Certainly they knew the lakes and marshes of Big Muddy Basin. White Walnut Creek seems not to have as favorable a set of geomorphic conditions as many other nearby areas for human occupation.

Soils

The Perry County Soils Association map indicates that the area was wooded at the time of settlement, except for the Tamaroa upland prairie and the broadest portion of the flat divide on the south where the railroad is located (Map 1). The soils belong to planosols characteristic of the Southern Till Plain. They tend to have a thin A horizon and a rather impermeable B horizon with high percentages of clay and silt. The soil parent materials are derived from three types of Quaternary deposits: loess, glacial till, and alluvium.

Soil types in the study area correspond generally with the various topographic zones and their associated vegetative regimes. Bottomland zones are associated with Bonnie and Belknap soils, slopes are characterized by Ava and Hickory soils, and the uplands contain Bluford, Wynoose, Cisne, and Hoyalton soils. All are characteristic of wooded environments, except the Cisne and Hoyalton soils, which support prairie growth.

Bonnie and Belknap soils identify bottomland zones and were formed from sediments deposited after stream flooding. In the White Walnut Creek area, Bonnie soils occur in the relatively wider bottomlands bordering the creek itself, while soils are restricted to the narrower drainage valleys (Miles et al. 1970). Because of the poor drainage capabilities of these soils, they are prone to frequent flooding and often are water saturated. In the spring, floodwaters may remain in small depressions for weeks. Thus, much of the lowlands of White Walnut Creek can not be cultivated economically and remain wooded.

Ava and Hickory soils are typically associated on slope topography and are the predominant soil types for the slope zone in the Deep Strip #3 area. This zone is characterized by moderately well drained hilly or rolling topography bordering bottomland areas and supporting a wooded environment. Degrees of slope are highly varied in the study area. Hillsides bordering the south side of White Walnut Creek are usually moderately steep to steep. On the north side, slopes leading from the bottomlands to the uplands are generally moderate, typically short, and irregular. There is no terrace development in the White Walnut Creek area.

Ava soils, formed in loess, most frequently occur on moderate slopes of 1 to 5%. Hickory soils, on the other hand, were formed in till on moderately steep to steep slopes, ranging from 5 to 50%. Because they were formed in glacial till, Hickory soils contain cobbles and pebbles of various igneous and metamorphic rocks, sandstone, and chert. Many of these cobbles are fist size

or larger and were almost assuredly a source of lithic raw material for the prehistoric inhabitants of this area (Appendix A, Figure 23).

Ava silt loam, by far the major soil type in terms of archaeological context in the area, is characterized by a silty surface layer, a rather firm upper subsoil, and a highly compact, mottled lower subsoil, referred to as a fragipan (Miles et al. 1970). Both Ava and Hickory soils are strongly acidic, an important factor for archaeological considerations, especially with reference to recovery of subsistence data.

Upland areas are characterized by the presence of Bluford, Wynoose, Cisne, and Hoyalton soils. Whereas, other soil types in the Deep Strip #3 study area are associated with forest vegetative regimes, the upland soils are indicative of open woodlands and grasslands environments. The Bluford and Wynoose soils occur within the study area and are associated with an open woodlands environment referred to as post-oak flats (Worthen 1868:84-85). Cisne and Hoyalton soils represent former prairie areas which occur immediately outside the study area.

The Bluford and Wynoose soils occupy near level to gently sloping topography, dissected by drainageways. All areas of Wynoose association as well as those of Bluford silt loam in the project area display a slope gradient ranging from 0 to 3%. These soils were formed in loess and are characterized by a light surface color having a somewhat silty surface layer and a clayey subsoil (Miles et al. 1970).

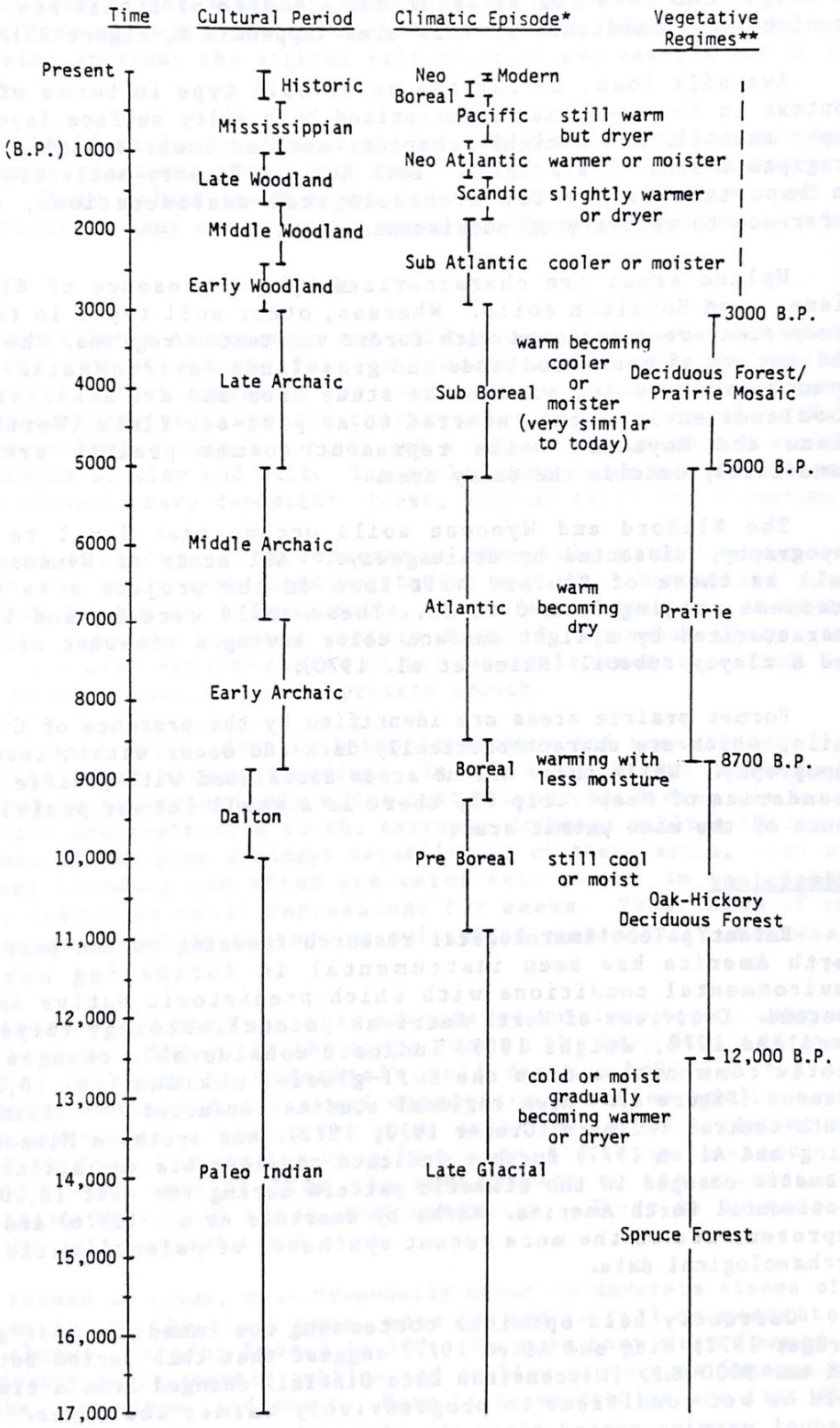
Former prairie areas are identified by the presence of Cisne and Hoyalton soils, which are characteristically dark and occur within level to near level topography. While there are no areas associated with prairie soils within the boundaries of Deep strip #3, there is a small former prairie region to the south of the mine permit area.

Climatology

Recent paleoclimatological research focusing on the past 18,000 years in North America has been instrumental in furthering our knowledge of environmental conditions with which prehistoric Native Americans had to contend. Overviews of North American paleoclimatology (Bryson et al. 1970; Wendland 1978; Wright 1981) indicate considerable changes in climate and biotic communities from the full-glacial maximum (ca. 18,000 B.P.) to the present (Figure 2). Even regional studies conducted for Illinois (King 1981), south-central Illinois (Gruger 1970, 1972), and southern Missouri and Illinois (King and Allen 1977) further indicate considerable variability and sometimes dramatic changes in the climatic pattern during the past 12,000 years in mid-continental North America. Works by Baerreis et al. (1976) and Wendland (1978) represent two of the more recent syntheses of paleoclimatic data vis-à-vis archaeological data.

Currently held opinions concerning the immediate post-glacial climatic (Gruger 1972; King and Allen 1977) suggest that this period between ca. 15,000 and ca. 9000 B.P. (Wisconsinan Late Glacial) changed from a time of relatively cold or wet conditions to progressively warmer and dryer. Data suggest a gradual warming period after the close of the last Wisconsinan glaciation, ca.

Figure 2. Cultural and Environmental Sequences



*After Wendland, 1978
**After King (1981), King and Allen (1977), King and Lindsay (1976)

12,000 B.P. to ca. 9000 B.P. This climatic warming resulted in a succession of vegetative regimes. Late glacial spruce forests had disappeared from the Illinois and Missouri Ozarks ca. 12,000 B.P. (King 1973), being replaced by oak-hickory deciduous forests which persisted until ca. 9000-87000 B.P. (King and Allen 1977:321).

Between nine and five thousand years ago, a warm, dry period called the Hypsithermal prevailed, during which prairie vegetation expanded across Missouri and Illinois creating the Prairie Peninsula (Wright 1976). Evidence from Old Field, southeastern Missouri (King and Allen 1977), indicates drought conditions in the Middle Mississippi River drainage were reached by 8700 B.P., resulting in prairie species encroaching on the mesic deciduous forest and marking the beginning of the Hypsithermal (King 1981:59). This period of reduced effective precipitation persisted until ca. 5000 B.P., when increased moisture spurred the renewed development of deciduous forest coverage (King and Allen 1977:320-321). However, the return of more moist conditions did not spur the disappearance of the prairie; it only reduced its margins, with interior grasslands remaining essentially unchanged. In forest/prairie border regions, the effect of the late Holocene increases in precipitation resulted only in the rearrangement of the forest/prairie mosaic rather than a succession from forest to prairie vegetative regimes. This vegetation pattern persisted in southcentral Illinois until destroyed by modern cultivation (Gruger 1972:217, 225).

Recent archaeological investigations assume that present climate and associated vegetation patterns, during most of prehistory, are comparable to that of the early historic period. Although this has yet to be demonstrated and must remain an open question until paleoecological data (specifically pollen profiles) from the area are available, information accumulating from elsewhere in Illinois tends to support the contention of vegetational stability for at least the last 4,000 to 7,000 years (Ford 1974:389; Geis and Boggess 1968:89; Zawacki and Hausfater 1969:62-63).

The relative stability of the general climatic and vegetational patterns do not dismiss the importance of minor climatic change to cultural subsistence systems. Important investigations into climate and culture by Griffin (1960), Baerreis et al. (1976), Wendland (1978), and others indicate that past changes in the climate have occurred and that they have been of sufficient magnitude to have affected cultural subsistence-settlement patterns. Climatic trends relevant to each cultural period are discussed in the cultural history section of this report.

The current climatic conditions for the Perry County area are typified by warm to hot summers and cold winters characteristic of a humid, temperate climate. Prevailing winds are generally out of the northwest during the winter months and out of the southwest during summer. The annual mean temperature is 14° C (57° C) (Trewartha et al. 1967) while an average of 168 frost-free days can be expected per annum in this area (Miles et al. 1970). Precipitation is evenly distributed throughout the year with slightly greater amounts coming in April and May. On the average, about 120 cm (40 in) of precipitation accumulates in Perry County every year.

Biotic Communities

Presettlement Vegetation

Howell and Kucera (1956), Wood (1976), King (1978), and Roper (1979) are among these who have discussed critically the use of Government Land Office (GLO survey) data in constructing models of presettlement vegetation. While these authors offer qualified support of the use of the data available in government surveyors' notes, they caution against their inherent limitations. In particular, Wood (1976:206) has noted that "many of the surveys were made near the end of a climatic episode of lower than present worldwide temperatures (i.e., the Neo-Boreal or Little Ice Age), consequently, the vegetation models that are constructed do not reflect a climatic regime like that of the present."

Roper (1979:59) has suggested that the GLO data better reflect the forest composition and boundaries of Woodland times than that of prior periods. Hence, use of GLO derived data may be more appropriate for reconstruction of Woodland and later vegetation distributions than for the earlier Archaic period. However, it must be remembered that the GLO surveys were conducted towards the end of the New Boreal when forests were encroaching on prairie environments (Howell and Kucera 1956:215; Wood 1976). Even in the later, post Archaic periods of prehistory, minor climatic fluctuations resulted in shifts of the prairie-forest border. The implications of these fluctuations increase in importance when such data are employed in the reconstruction of microenvironments with specific project areas. Data for specific climatic conditions for each period should be evaluated to determine applicability of GLO-based reconstructions.

GLO data were summarized using methods as suggested in the literature (Bourdo 1956; Cottam and Curtis 1949). The distance between two trees at each quarter section mark was measured by the original surveyors, and the species and diameter at breast height for each tree were recorded. Frequency may be expressed as a percentage of the quarter section marks at which a species is cited. To obtain density figures for each species, it is necessary to first obtain an estimate of total density. This estimate was calculated by taking the inverse of the average distance among all trees and squaring it. Relative density was calculated by dividing the number of trees of a species by the total number of trees which were recorded for the township. Absolute density for each species was determined by multiplying relative density for each species, expressed as a fraction, by total density for all species.

Absolute dominance was obtained by first converting diameter measurements to basal area figures and then obtaining an average basal area for each tree species. This average basal area was multiplied by the absolute density estimates to obtain absolute dominance figures for the tree species. Relative dominance was obtained by dividing the absolute dominance for each species by the total absolute dominance for all species and expressing this fraction as a percentage.

Approximately 17% of T5S, R2W, was originally prairie. The remainder of the township was forested with white and black oaks as dominants. The township was very thinly timbered, and surveyors noted an undergrowth of shrub oak and

hickory, hazel, grapevines, and briers. On several occasions, GLO surveyors noted that the area was "very brushy" and was made up of "second rate timber." A summary of the vegetational data is shown on Table 1.

There is no significant association between tree species and soil series. There is, however, a significant association ($p<.01$) between prairie vegetation and Cisne-Hoyalton soil association. Consequently, this soil has deeper, thicker surface layers than other soils in the township.

Physical relief in Perry County is not marked, with gradients being gentle. The topographic factor does not influence directly the vegetation, trees in particular, as much as is usual. Therefore, it is the quality of the site, soils in particular, that are most influential in the distribution of the species.

White oak and black oak are climax dominants of upland well drained forest in this area. The community of white oak and black oak usually is expressed best on the mid slopes of both north- and south-facing slopes. White oak general occupies the drier sites in this community. Hickories, particularly the bitternut, occupy the same community. Pignut hickory occupies successional areas of this upland community. Kingnut and shagbark hickories are found on lowlands.

White oak and black oak are both abundant mast producers. Squirrel, turkey, and quail would flourish in such a forest in the presettlement time. Deer would also have been plentiful, as there were numerous contacts with prairies; and there were numbers of less sharply defined areas of prairie-forest border which were called barrens or openings. The energy flows across border areas are great, and areas of transition are recognized as productive in terms of wildlife.

Table 1

Presettlement Tree Densities
T5S, R2W, Perry County, Illinois

Species	Relative Density, %	Density, Trees/A	Relative Dominance, %	Dominance, ft^2/A	Frequency
White Oak	52.72	10.46	61.69	14.93	57.26
Black oak	23.34	4.63	20.04	4.85	26.49
Hickory	12.70	2.52	8.18	1.98	12.82
Elm	3.33	.66	.54	.13	3.42
Pin oak	3.98	.79	2.56	.62	5.13
Ash	1.31	.26	1.90	.46	1.71
Oak species	.65	.13	.95	.23	.85
Black Walnut	.65	.13	2.64	.64	.85
Sour gum	.65	.13	.74	.18	.85
Sassafras	.65	.13	.74	.18	.85

The low density, i.e., the number of trees per acres, and the low dominance figures indicate not only was the timber an open stand but that the trees were mostly young. The low square footage of the basal area indicates this. It is possible that if fire was a disturbing factor the rate of succession was slowed by the poor site quality. The presence of numerous vines, such as grapes and smilax, and the presence of numerous briers in the blackberry-dewberry group and the presence of hazel brush are indicative of disturbances (probably timber harvest or fire). The post oak is found on the poorest upland soils, usually with poor drainage, or upland flat areas. Post oak is a slow growing species which usually does not attain large diameters except in very old individuals.

The order of species from lowland to upland would follow this order: elm, pin oak, ash, black walnut, sour gum, hickory, black oak, and white oak. Post oak (which is in the white oak group) usually is found on the highest sites. In Perry County, such sites are not pronounced, and the site is often a flat area. The present post oak community is distinctive and easily recognized. The phrase "Post Oak Flats" is often used to describe the community. The amount of post oak and white oak as seen by visual estimate (roadside cruising) is nearly equal.

Present Biotic Communities

The environmental zones in the Deep Strip #3 area are essentially identical to those discussed by Denny (1972) and Pulcher (1974a). Drawing on their information and on soil data (soils map; Miles et al. 1970) and on general topography, the following zones are recognized: bottomland forest, slope woodland, and post oak flats. One other zone -- prairie -- is briefly discussed. Although it does not occur within the study area proper, it is found within the general region. Present land-use types for the Deep Strip #3 area are: cropland (65%); woodland (26%); pasture (6%); and water, roads, and residential (3%).

The bottomland forests occur in the relatively wider bottomlands bordering White Walnut Creek. These forests occur on soils found from alluvial sediments deposited as a result of stream flooding. The soils of the area are often well saturated due to poor drainage characteristics and frequent late winter - early spring inundation. However, this environment supports a wide variety of plant and animal resources.

The dominant tree species for this type of environment include pin oak (Quercus palustris), ash (Fraxinus sp.), elm (Ulmus sp.), sweetgum (Liquidambar styraciflua), and cherrybark oak (Q. falcata) (Voigt and Mohlenbrock 1964:117). The bottomland forest zone offered a variety of seasonally available resources which would have been available to prehistoric man. The creek itself, besides providing an obvious source of water, was also a source of plants and fish. In the adjacent predominantly aquatic/riparian environment, beaver, muskrat, raccoon, and other mammal species were abundant. In the surveyed area of White Walnut Creek, approximately 525 acres (210 ha) or 20% of the total area lies within the bottomland forest zone.

The slope woodland zone was first described by Pulcher (1974a:9). Denny (1972) had included it as a part of his post oak flats zone; but, judging from

the differences in soils, topography, and vegetation, Pulcher's distinction seems to be more accurate. This zone is characterized by moderately well drained hilly or rolling topography bordering the bottomland areas.

Voigt and Mohlenbrock (1964:176) state that a typical slope community would be dominated by white oak (Quercus alba) and black oak (Q. veluntina), with red oak (Q. rubra) and pignut hickory (Carya glabra) as other important tree species. The presettlement vegetational reconstruction seems to substantiate this.

The most obvious natural resources of the slope woodland zone would be acorns and nuts from dominant oak and hickory trees. Directly associated with these would be a variety of indigenous fauna: squirrel, turkey, and especially white-tailed deer. The slope woodland zone comprises approximately 1,340 acrea (536 ha) or about 51% of the surveyed area.

Post oak flats occupy near level to gently sloping topography, dissected by drainageways. Because of the level topography and the soil constituents, post oak flats zones generally are poorly drained.

> The "post-oak-flats" are nearly level stretches of upland, which are very sparsely timbered, with post-oak of sturdy growth, standing far apart and interspersed with black-jack [oak] and young post-oak. They form an open forest, and the nearby white soils is but scantily covered with vegetation. . . .
>
> . . . . these "flats" extend around the prairies, forming a narrow belt between them and the more broken timbered lands adjacent, and also form the highest portions of the broad flat ridges between the streams where no prairies occur (Worthen 1868:84-85).

These early observations adequately describe the White Walnut Creek area where prairies are absent.

As the name implies, the dominant tree species for this zone is post oak (Quercus stellata), with black-jack oak (Q. marilandica) and pin oak (Q. palustris) as important subdominants. These trees are all associated with poorly drained soils, the latter being found in wet areas. In the White Walnut Creek region, the post oak flats zone comprises approximately 760 acres (304 ha) or 29% of the total surveyed area. Most of this zone lies in the area south of White Walnut Creek.

Former prairie regions occur within level to near level topography to the south of the study area. The dominant vegetation of prairies is grasses. Voigt and Mohlenbrock (1964:150) state that at the time of settlement the prairie regions of southern Illinois were dominated by big bluestem (Andropogen gerardii) with Indian grass (Sorghastrum nutrans), wild rye (Elymus canadensis), switch grass (Panicum verigatum), and slough grass (Spatine pectinate) as other important grass species.

In summary, the environment of the Deep Strip #3 area is dominated by the

slope woodland zone which comprises over 50% of the total area. The succession of environmental zones ranges from bottomland forest to slope woodland and eventually to post oak flats. Exploitable resources seem to have been concentrated in the bottomland forest and slope woodland zones. Acorns, nuts, upland forest species of birds and mammals, white-tailed deer, wood, and lithic raw material were all present in the slope woodland zone, while the bottomland forest offered water, fish, plants, turtles, aquatic-riparian species of mammals, and lithic raw material. The only apparent resources of the post oak flats would be acorns and perhaps white-tailed deer. The seasonal nature of some of these resources is readily apparent. Acorns and nuts would be available only in the autumn, and deer would be seasonally concentrated in the area of these resources at this same time.

CULTURAL CONTEXT

Prehistoric Overview

Introduction

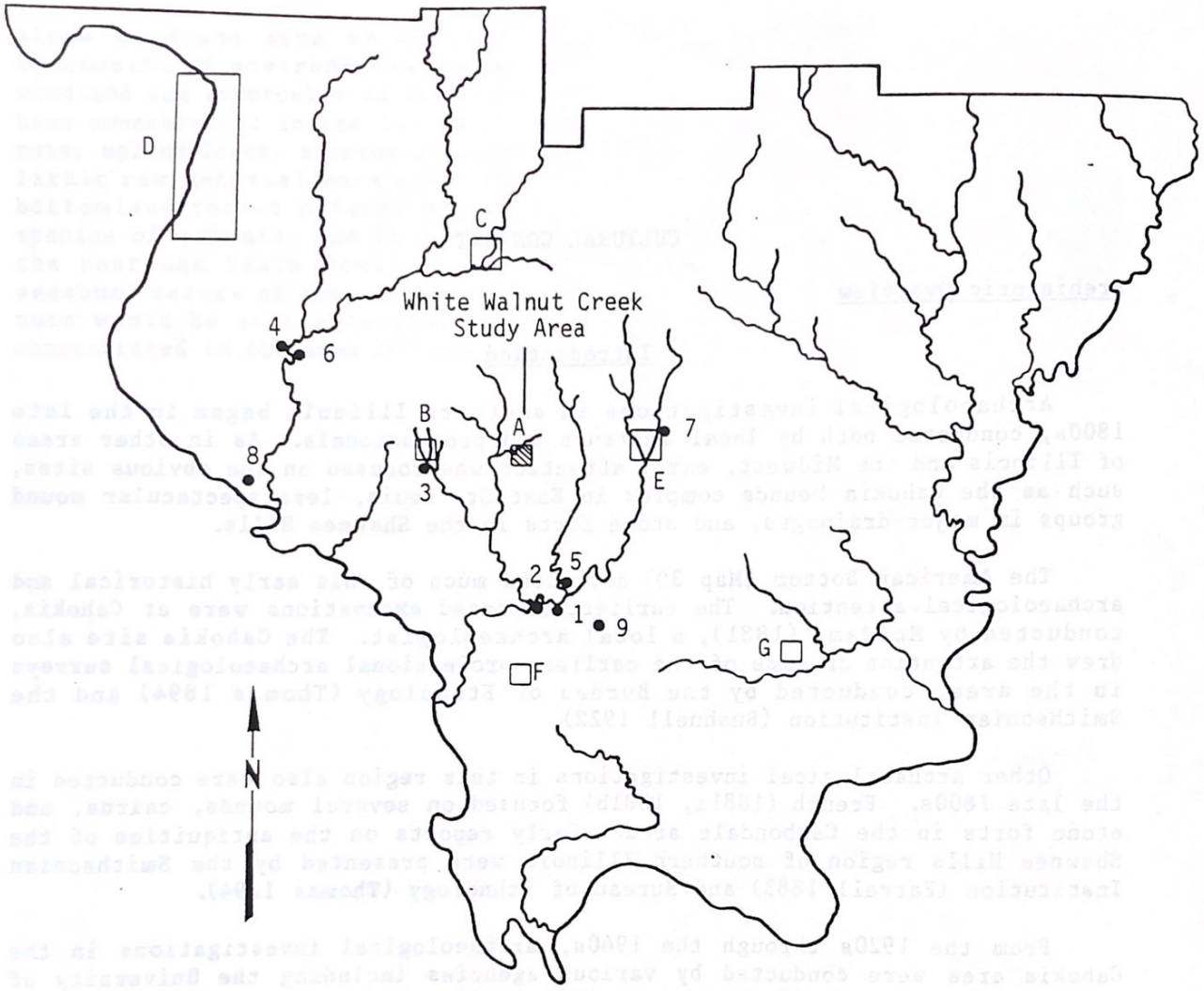
Archaeological investigations in southern Illinois began in the late 1800s, conducted both by local amateurs and professionals. As in other areas of Illinois and the Midwest, early attention was focused on the obvious sites, such as the Cahokia Mounds complex in East St. Louis, less spectacular mound groups in major drainages, and stone forts in the Shawnee Hills.

The American Bottom (Map 3D) attracted much of this early historical and archaeological attention. The earliest reported excavations were at Cahokia, conducted by McAdams (1881), a local archaeologist. The Cahokia site also drew the attention of some of the earliest professional archaeological surveys in the area, conducted by the Bureau of Ethnology (Thomas 1894) and the Smithsonian Institution (Bushnell 1922).

Other archaeological investigations in this region also were conducted in the late 1800s. French (1881a, 1881b) focused on several mounds, cairns, and stone forts in the Carbondale area. Early reports on the antiquities of the Shawnee Hills region of southern Illinois were presented by the Smithsonian Institution (Farrell 1883) and Bureau of Ethnology (Thomas 1894).

From the 1920s through the 1940s, archaeological investigations in the Cahokia area were conducted by various agencies including the University of Illinois (Leighton 1928; Moorehead 1922, 1923, 1928) and the Illinois State Museum (Crook 1922). Much of this work was focused on the Powell Mound group and provided the early interpretive efforts based on the Old Village and Trappist ceramic phases outlined by Griffin (1949). The University of Chicago (Rinaldo 1937), the Milwaukee Public Museum, and serious local amateurs (e.g., Titterington 1935, 1938, 1942) also participated in these early efforts. The work of these amateurs was augmented by investigations sponsored by the Works Progress Administration (Fowler 1969:9). Much of this early work was directed towards mound groups.

The first university-organized investigations in southern Illinois, outside of the American Bottom, were fielded by the University of Chicago in 1934. Controlled excavations at the Kincaid site, located south of the Shawnee Hills on the Ohio River, identified two Woodland foci, the Baumer focus and Lewis focus, which were overlain by a Mississippian occupation at the site (Cole 1951). Four years later, Maxwell began salvage excavations on sites in the Carbondale area which were to be destroyed by the development of the Crab Orchard Reservoir. Based primarily on the ceramic variation observed in this area, Maxwell (1951) established three Woodland cultures: Crab Orchard,



MAP 3

White Walnut Creek
Archaeological Areas and Archaeological Sites
Discussed in This Report

□ Archaeological Areas
- A - White Walnut Creek (Deep Strip #3)
- B - Galum Creek (Northfield)
- C - Carlyle Lake
- D - American Bottom
- E - Rend Lake
- F - Cedar Creek
- G - Carrier Mills

● Archaeological Sites
- 1 - Dillinger
- 2 - Raymond
- 3 - Burning Star
- 4 - Marty Coolidge
- 5 - Consol
- 6 - Emege
- 7 - Fry #1
- 8 - Modoc
- 9 - Sugar Camp Hill

Raymond, and Dillinger. The earlier research of Cole (1951) and Maxwell (1951) has served as a descriptive and chronological framework for more recent archaeological investigations in southern Illinois.

As a result of these investigations in Illinois and elswhere, archaeologists have developed a broad cultural/historical classificatory scheme with which to organize and describe the prehistory of the midwestern and eastern United States. The cultural periods, beginning with man's arrival in the New World, are: Paleo-Indian, Early Archaic, Middle Archaic, Late Archaic, Early Woodland, Middle Woodland, Late Woodland, and Mississippian (Figure 3). These periods are established on the basis of cultural traits identified through archaeological research and are not to be confused with the historic tribal groups which were encountered by the first Europeans to arrive in the New World.

This long Prehistoric period can be characterized by an increase in cultural complexity, beginning with small hunting and gathering societies which evolved into more complex societies. Subsistence activities began with the collecting of wild plant and animal foods and culminated with the increased reliance on the three major New World domesticates -- corn, beans, and squash. Increases in human population and trends toward urbanization are evident, reaching their highest levels of social complexity during the Mississippian period.

Paleo-Indian Period (15,000-8000 B.C.)

The Paleo-Indian period is best known from the western United States where numerous archaeological sites have produced cultural material in association with a late Pleistocene fauna. These are the well-known Clovis and Folsom cultures associated with extinct mammoth and bison, respectively.

Paleo-Indian peoples inhabited an environment undergoing dramatic changes as a result of the retreating glaciers (Haynes 1980:119). Although they are often referred to as big-game hunters because of the association of their hunting tools with now extinct megafauna, recent reconsiderations of Paleo-Indian subsistence patterns deemphasize the picture of sole reliance on post-Pleistocene megafauna as presented in earlier reconstructions. These large "protein packages" were only a minimal part of their total diet, the major portion probably comprised of modern-day fauna (e.g., caribou, elk, deer) and plant foods (Ford 1974; Griffin 1967).

Paleo-Indians most likely moved in small bands over a relatively large area and with undoubtedly low population densities (Ford 1974:388). Haynes (1980:119) depicts Clovis peoples as nomadic foragers exploiting mammoth and bison, yet relying heavily on locally available vegetation as a dietary source. Recent evidence from Kimmswick, Missouri (Graham et al. 1981), presents a picture of a varied subsistence base for Clovis culture, utilizing mammals ranging in size and type from squirrels to mastodons. As per mobility, recent studies of chert exploitation patterns (Gramly 1980; Haynes 1980:118) indicate that Paleo-Indian groups were far ranging, exploiting multiple source localities, over hundreds of kilometers. In addition, ongoing research at Kimmswick, Missouri (Graham 1979), promises to shed new

Figure 3

Southern Illinois Cultural Chronology

	Years	Cultural Period
HISTORIC	Present	
		Agricultural/Industrial
	A.D. 1900	
		Early Agricultural
	A.D. 1850	
		Pioneer
	A.D. 1780	
		Colonial/Frontier
	A.D. 1700	
		Explorer
	A.D. 1673	
		Protohistoric Period
PREHISTORIC	A.D. 1500	
		Mississippian
	A.D. 900	
		Late Woodland
	A.D. 400	
		Middle Woodland
	400 B.C.	
		Early Woodland
	1000 B.C.	
		Late Archaic
	3000 B.C.	
		Middle Archaic
	6000 B.C.	
		Early Archaic
	8000 B.C.	
		Paleo-Indian
	15,000 B.C.	

light on some of the earliest cultures utilizing this portion of the New World.

Comparatively little is known about the Paleo-Indian tradition in the eastern United States. The occurrence of fluted and lanceolate projectile points (e.g., Clovis, Quad, Cumberland, and Agate Basin projectile points) is the most diagnostic remnants of Paleo-Indians. Recently, fluted projectile points were found in direct association with mastodon remains near Kimmswick, Missouri (Graham 1979). This discovery is the only direct association of Paleo-Indian tools with extinct Pleistocene fauna in the Midwest. In southern Illinois, Denny (1972:161) reports three sites within the Big Muddy River basin which contain material of Paleo-Indian affinity. Williams and Woods (1978) reported five Paleo-Indian components located on first and second order intermittent streams in the extreme uplands of the Kaskaskia River drainage system. One of these sites, R-392, is located just north of the present study area. Recent fieldwork in the St. Marys River drainage to the west of White Walnut Creek has produced portions of two Agate Basin projectile points (Barr et al. 1982:164). The occurrence of materials from the Agate Basin complex, a high plains cultural complex dating from ca. 8500-8000 B.C. (Irwin-Williams et al. 1973:47; Willey 1966:46-47), is infrequent but not uncommon in Illinois. Since recent investigations of prehistoric chert exploitation patterns by Gramly (1980) indicate that Paleo-Indian groups traveled great distances, it would appear that Illinois may be at the fringe of distribution of Agate Basin materials.

Dalton Period (ca. 8600-ca. 7000 B.C.)

The Dalton phase represents a transition from the late Paleo-Indian period to the Archaic, the nature of which is reflected in both subsistence and climatological change. Dates for Dalton occupations are not firm and are the subject of recent debate. The chronological placement of Dalton generally has been derived from cultural deposits exhibiting relative stratigraphic placement that is post Paleo-Indian and either prior to or contemporaneous with the earliest Archaic complexes. Suggested dates generally range from 8000-7000 B.C. (Chapman 1975:96), although others from Perino (1958:18) to Stoltman (1978) cite dates between 8000-6000 B.C. Goodyear (1982), in a critical review of Dalton literature, posits a shorter and earlier span of 8600-7900 B.C. based upon firm radiocarbon dates from Rodgers Rock Shelter in Missouri.

While there is disagreement on the Dalton complex temporal placement, the transitional nature of Dalton technology is agreed upon more widely. It has been noted repeatedly that the Dalton lithic industry and late Paleo-Indian assemblages "share a common blade and flake industry" (Goodyear 1982:384).

Paleo environmental studies also support the transitional nature of the Dalton complex. Ecologically, the Dalton period represents a change from oak-hickory forest to prairie encroachment in many parts of Illinois (King 1981). Dalton tool kits discussed by Chapman (1975:96) reflect exploitation of a more varied subsistence base, representing an adaption to multiple resource exploitation during the forest to forest/prairie transition. Dalton culture and technology viewed in the context of the ecological transition during the

Pleistocene-Holocene boundary by Chapman (1975:96) and Goodyear (1982) suggest a settlement shift from the nomadic hunter lifestyle of Paleo-Indian to a seminomadic hunter-forager economy.

Dalton period components in southern Illinois have been defined by the presence of Dalton projectile points and tools in the collections from various sites. Dalton type blades and points were recovered in the lowest levels at the Modoc Rock Shelter (Map 3, site 8) near Prairie du Rocher (Fowler 1959:37) at the edge of the Mississippi River floodplain. Dalton points also have been recovered from upland sites near the study area from the Marys and Big Muddy River drainages (Barr et al. 1982; Van Hoy 1980).

Early Archaic Period (8000-6000 B.C.)

Ten thousand years ago, as the climate continued to warm, the forests of the eastern United States began to reach their modern form as broadleaf deciduous species rapidly replaced coniferous forms. Ecologically, the Early Archaic period is still a period of transition. The mesic deciduous forests that replaced the boreal spruce forests during the Late Glacial gave way to predominantly oak-hickory forests (King 1981) such as those found in the Illinois Ozark Plateau. Towards the end of the Early Archaic (ca. 6500 B.C.), increasing aridity signalled the beginning of the formation of the present day Prairie Peninsula during the Hypsithermal interval (cf. King and Allen 1977). During the Early Archaic, Illinois vegetation and animal life assumed its present configuration (Griffin 1968:130).

Important information concerning Archaic groups in southern Illinois was obtained through excavations at the Modoc Rock Shelter located in the bluff line adjacent to the Mississippi River floodplain 2 mi north of the Village of Modoc in Randolph County, Illinois (Map 3, site 8). This rockshelter site, first reported by Fowler et al. (1956), consists of cultural deposits over 30 ft deep dating between 8000 B.C. and 2000 B.C. Of particular importance were data recovered on Early Archaic deposits from the lowest levels at Modoc. Important ecological data also were recovered from excavations at this stratified site (Fowler 1959). Additional information on the Archaic occupations of Modoc was recovered during the 1980 field season. Data from this site, other excavations in southern Illinois and elsewhere, coupled with recent paleo-ecological data present a picture of continuing adaptation by human groups to the early Holocene environment.

The Early Archaic can be regarded as a period of initial adaptation and change to this environment. As new subsistence items became available and abundant, they were added to procurement strategies. Acorns, various types of nuts, fish, and mussels all became more abundant with the changing conditions. This broadening of the subsistence base and successful adaptations to varied environments is reflected in the establishment of archaeologically distinguishable regional traditions.

Investigations by Williams and Woods (1978) served to locate a previously unknown chert source and knapping station of Early Archaic affiliation on an intermittent tributary of the Kaskaskia drainage system near Waterloo, Illinois, in Monroe County. Hardin and Kirk projectile point types were found in association with numerous oval preforms made from chert nodules obtainable

in the nearby Gerhardt Creek (Williams and Woods 1978:26-27). The Harden projectile point style is a good indicator for the Early Archaic period. While older references (e.g., Bell 1960:62) have sometimes treated the Kirk complex as extending into the Middle Archaic, a recent overview of Dalton and Early Archaic complexes (Goodyear 1982) note that Kirk points have been dated firmly via C-14 dating: St. Albans, West Virginia, 9850 ± 500 B.P.; Thunderbird site, Virginia, 9900 ± 340 B.P.; and, several dates from lower Little Tennessee River at ca. 9500-9000 B.P.

Van Hoy (1980:61) discusses large Early Archaic sites with low density lithic concentrations, which are located along the upland divide between the Marys River and Big Muddy River drainage basins. Projectile point styles present on these sites include Thebes and Hardin. It is suggested that these Early Archaic sites served as base camps from which the vast resources of both drainages were readily accessible. One possible Early Archaic site, R-398, has been previously recorded for the Eden Field research area (Williams and Woods 1978). Additional Early Archaic sites have been reported for the Galum Creek area west of the study area (Haas and McNerney 1980) and the Little Muddy River to the southeast (Powell et al. 1982b). Denny (1972) reported 13 Early Archaic components from the Big Muddy basin.

Middle Archaic Period (6000-3000 B.C.)

By 6000 B.C., the environment was essentially modern, and the Middle Archaic can be described as continuing a trend toward broad spectrum resource utilization and toward more efficient adaptation to local environments (Caldwell 1958; Fowler 1959). This is evidenced in Illinois and the eastern United States by a diversification of tool kits, noticeably the appearance of full grooved axes (Griffin 1955). Other new artifact types include stone pendants and bannerstones and the emergence of a well-developed bone tool industry including various awls, antler projectile points, atlatls, bone fishhooks and beads, tortoise shell cups, and necklaces of mammal teeth (Griffin 1968:133). Population densities gradually increased but still remained relatively low. Middle Archaic sites are identified by the presence of side-notched points of the Cairo and Modoc varieties (Denny 1972:162). Denny reports 29 Middle Archaic components for the Big Muddy River basin. Much of our knowledge of the Early and Middle Archaic in southern Illinois comes from the Modoc Rock Shelter (Fowler 1959).

Recent work near Carrier Mills (Map 3G) in Saline County (Jefferies 1980:personal communication) by the Center for Archaeological Investigations at Southern Illinois University at Carbondale has revealed a major Middle Archaic occupation dating from ca. 4000-2000 B.C. Abundant human skeletal remains, deep midden accumulation, and large quantities of floral and faunal remains indicate a semipermanent habitation, perhaps a major base camp. Excavation at the Sump Site on the Kaskaskia River (Binford 1962) revealed three rock concentrations found in association with a Middle Archaic Faulkner side-notched projectile point, a fully grooved ax, and minor chipping debris (Rackerby 1968:77).

Available evidence indicates only limited use of upland zones during the Middle Archaic period. Light Middle Archaic components have been identified in the Upper Galum Creek drainage (Haas and McNerney 1980) and in the Marys

River Drainage (Barr et al. 1982). There were no Middle Archaic sites reported for the Marys River drainage by the FAP-410 project (Williams and Woods 1978) or the ICGG project (Van Hoy 1980).

Late Archaic Period (3000-1000 B.C.)

The Late Archaic period is marked by a considerable growth in population, distinct regional adaptations, and interregional exchange systems. A more sedentary way of life is indicated, although seasonal movements were still necessary. Because of larger population densities, these movements became more restricted spatially. Archaeological data point to an expanded resource base with a marked increase in the exploitation of plant resources. This broad spectrum resource utilization is thought to be an important preadaptation to the development of agriculture in eastern North America (J. Brown 1977:168; Winters 1974:xiii).

In the southern Illinois area, Late Archaic sites are identified by the presence of Trimble, Merom, Saratoga, and Cypress points. Late Archaic occupations in the area are known primarily from reports by Fowler (1959) and Winters (1969). Winters' work on the Late Archaic Riverton culture (1967, 1969) consisted of a functional approach designed to retrieve subsistence and settlement information from Late Archaic sites in the drainage. It has served as a model for other researchers interested in the cultural dynamics of subsistence-settlement systems.

Fifty-five percent of all the recorded sites in the Carlyle area on the Kaskaskia River had Archaic components. However, with the exception of the Sump site mentioned previously, excavation failed to isolate information on the components from the later Woodland and Mississippian occupations at the sites. The Late Archaic was represented on three sites in the ICGG survey area between the Marys and Big Muddy drainages. These components were defined on the basis of one projectile point from this period on each site. Early Archaic sites have been reported previously for the Marys River drainage (Barr et al. 1982; Williams and Woods 1978).

Early Woodland Period (1000-400 B.C.)

The appearance of pottery generally is considered the marker for the Woodland period. Also, with the advent of Early Woodland comes the first evidence for agriculture. Cultigens included squash and various indigenous seedy plants. However, these were only a minimal part of the total diet, and Early Woodland populations continued an essentially Late Archaic way of life (Ford 1974:401). Very little is known about the Early Woodland period in southern Illinois. Sites are identified by the presence of Fayette Thick, Marion Thick, undecorated Crab Orchard fabric marked, and Sugar Hill cord marked ceramic types (McNerney 1975:407).

Early Woodland components are recognized at sites in the Cedar Creek area of the Shawnee Hills (McNerney 1975), possibly at the Marty Coolidge site on the Kaskaskia (Kuttruff 1972:42), at the Sugar Camp Hill site on Crab Orchard Creek (Maxwell 1951) (Map 3, site 9), and in the Carlyle Reservoir (Rackerby 1968:78-79). Melbye (1964a, 1964b) excavated two upland sites with Early Woodland components within the I-57 right of way. In most cases, the Early

Woodland component is mixed with earlier and later components, and internal site features or spatially definable site areas are usually difficult to identify. Along the Kaskaskia River, Marion Thick sherds, best known from the Illinois River valley, are found in small numbers (Rackerby 1968:79). Projectile points of this period include the types Kramer, Adena-like, and Cypress.

Two sites located on an intermittent tributary of the Little Muddy River and one site on an intermittent tributary of Beaucoup Creek exhibit Late Archaic/Early Woodland components (Powell et al. 1981, 1982b). American Resources Group, Ltd., reported two sites in the White Walnut Creek area that contained cultural material diagnostic of this period. None of the above sites contained Early Woodland ceramics.

Three sites with Late Archaic/Early Woodland components are located near the headwaters of the Little Marys River (Powell et al. 1982b). One of these sites, 21C4-180, is of particular interest to the present research. This site appears to be an Early Woodland knapping station geared to the reduction of the recently defined Blair chert which outcrops in the stream adjacent to the site. Blair chert was also important to cultures utilizing the Eden Field research area.

Middle Woodland Period (400 B.C.-A.D. 400)

The Southern Till Plain is a meeting ground between two previous and well-known Middle Woodland cultural complexes, the Havana Tradition of the Illinois River valley and the Crab Orchard Tradition to the south (Maxwell 1951). Any synthesis of Middle Woodland prehistory in Southern Illinois requires an understanding of the relationship of these two complexes (Struever 1964).

Early excavations on Middle Woodland period sites in southern Illinois were conducted by Thomas (1894) at the Vogel site in Jackson County. However, his work concentrated on mound groups as did the latter work of Hoffman (1960) and Maxwell (1951).

Maxwell (1951) defined the Crab Orchard culture from his work at the Sugar Camp Hill site and other sites in the Crab Orchard basin. The Crab Orchard occupation of the Shawnee Hills has been reported recently by McNerney (1975) (Map 3F) and Cremin (1975, 1978). The proposed settlement pattern is one in which seasonal movements into the area were made for the procurement of chert and the exploitation of seasonal plant food resources (Cremin 1975:403). Little is known about the Crab Orchard tradition within the till plains region with the exception of Denny's work in the Rend Lake area (Denny 1970). He interprets Crab Orchard sites in this area as representing small, seasonal plant food collecting occupations (Denny 1970:70). More research is needed in the till plains region in order to determine the nature of relationships between Crab Orchard populations of this area and those of the Shawnee Hills.

The first major archaeological investigations of Middle Woodland sites in the Big Muddy drainage resulted from the Rend Lake Salvage Project conducted between 1963-1968 (Bowels 1963; Chadwick 1963; Denny 1966, 1970; Orlandini 1966). In 1970, Denny reported on extensive excavations at the Brown Swamp

site and Big Bean site providing a summary of the archaeology completed to date at Rend Lake. Subsequently, Hall and Elliston (1972) conducted excavations on Fry #1 (Map 3, site 7), a small upland Middle Woodland site, while Denny's (1972) dissertation synthesized previous research producing an extensive study of the prehistoric utilization of the Big Muddy drainage.

Denny (1972:172, 177) divides the Crab Orchard Tradition into three phases: Early, Middle, and Late. The Early phase is marked by the presence of Sugar Hill cord marked and Crab Orchard fabric marked ceramics, while the Middle phase finds Crab Orchard cord marked and Crab Orchard fabric marked with nodes as the dominant types. The Fry #1 site (Hall and Elliston 1972) on the Big Muddy and the Crab Orchard component at the Consol site (Map 3, site 5) on the Little Muddy are representative of the Early and Middle Crab Orchard phases. Thin, well fired, Crab Orchard fabric marked sherds with exterior rim nodes are present also at the Consol site and suggest a Late Crab Orchard phase (McNerney 1981:personal communication). The introduction of Hopewellian ceramic motifs in the Middle and Late phases evidences participation in this widespread interaction sphere. Diagnostic lithic materials range from points with long, narrow, straight stems (Maxwell 1951:269-270) to varieties of well made corner-notched, Snyders points, and the well-known Cobden blanks (McNerney 1975:354).

In the Kaskaskia valley, both Havana and Crab Orchard ceramic traits occur. The frequency of Crab Orchard sherds is low in the Carlyle Reservoir area (Rackerby 1968:81), tending to be more frequent further south at the Marty Coolidge site (Kuttruff 1972:50).

During the Middle Woodland period, local and regional cultural complexes like Havana and Crab Orchard were linked by the set of socioreligious and economic traits known as Hopewell. This cultural manifestation is characterized by regional interaction, burial in mounds, and a variety of distinctive ceramic motifs. Trade in exotic goods, both raw material and finished items, was extensive. In southern Illinois, the Twenhafel mound and village site, located in the Mississippi River floodplain near Gorham, is representative of a Hopewellian religious and socioeconomic center. The North site is a major Middle Woodland mound group located in the Kaskaskia drainage, 7 mi downstream from the Carlyle Reservoir Dam (Rackerby 1968:83). Similar centers occurred throughout the midwestern, eastern, and southeastern United States and served as focal points for trade, elaborate ceremonialism, and social interaction approximately 2,000 years ago. Excavations which began in 1978 near Carrier Mills, in Saline County, are providing important new information relevant to Middle Woodland populations utilizing this portion of southern Illinois.

Three Crab Orchard components have been identified in the upper Galum Creek area (Haas and McNerney 1980), one near the Beaucoup Creek (Powell et al. 1982a), and one in the Little Marys River area (Powell et al. 1982b). All Middle Woodland components were assigned on the presence of diagnostic projectile point types or the occurrence of bifacial oval blanks. No Middle Woodland ceramics were recovered from these sites.

There were no Middle Woodland components identified by either the IDOT survey near the headwaters of the Marys River (Williams and Woods 1978), or

the ICGG Pipeline survey of the divide between the Marys and Big Muddy drainages (Van Hoy 1980). One Crab Orchard fabric marked sherd, however, was found on a predominantly Late Woodland site (24A2-24) located near the bluffs overlooking the Mississippi River floodplain at the headwaters of Degognia Creek, just south of the Marys River system (Van Hoy 1980). Present evidence indicates that during Middle Woodland these upper reaches of the smaller drainage systems were not extensively utilized.

Late Woodland Period (A.D. 400-900)

The end of the Middle Woodland/Hopewell period at approximately A.D. 400 is marked by an extensive reduction in interregional trade, a decrease in the complexity of ceremonial/mortuary practices, and a replacement of certain elaborate and exotic ceramic styles with more utilitarian regional forms. Late Woodland was characterized by an intensive exploitation of local resources toward the close of the period, supplemented by cultigens, including corn and squash (Ford 1974:403). During this time, social groups became more sedentary, and habitation sites became larger and more intensively occupied.

Late Woodland sites are identified by the presence of thin walled, well made, cord marked grit tempered ceramic vessels (Pulcher 1974b:85a). This ware is referred to as Raymond, a name derived from the type site just north of Carbondale on the Big Muddy River. Stone tools include Lowe flared base-like points and small corner-notched points.

The closing phases of the Late Woodland period in this region are represented by the Dillinger site (Maxwell 1951:230-231) just north of Carbondale (Map 3, site 1). Cord marked ceramic vessels became more globular in shape, often exhibited folded rims, and some smoothing on exterior surfaces. Projectile points are small, triangular, often side notched, and may now be referred to as arrow points. Another distinctive trait of this period, as well as the earlier Late Woodland phases, is the manufacture and use of antler projectile points (Maxwell 1951:231). Late Woodland populations continued to grow, and the evolutionary momentum eventually lead to the appearance of large urban centers, long distance trade, and a return to a religious and socioeconomic interaction throughout the midwest and eastern United States during the following Mississippian period.

Denny (1972:185) notes a relative lack of Late Woodland sites in the till plains region of southern Illinois, but this may be the result of sampling bias. Several Late Woodland sites were reported for the Galum Creek drainage (Pulcher 1974a). Excavations at the Burning Star site (Pulcher 1974b) on Galum Creek revealed an intensive early Late Woodland occupation, including human interments.

Late Woodland sites are well documented in the Kaskaskia drainage at Hatchery West (Binford et al. 1966), Emge (Stadler 1973), and the Texas site (Morrell 1965). Ceramic styles at the Late Woodland sites in the Carlyle area more closely resemble southern Illinois wares, e.g., Lewis and Raymond, than the northern Illinois wares, e.g., Weaver and Jersey Bluff (Fowler 1960:4b). Excavations at the Knoebel site, located on a branch of the Kaskaskia in St. Clair County east of the Carlyle area, identified a Late Bluff Woodland component (Bareis 1970). This site represents the most eastward intrusion

into the Kaskaskia drainage of a very late Late Woodland culture which, in the American Bottom, is transitional to Early Mississippian.

Nine Late Woodland components were reported on the upper Galum Creek (Haas and McNerney 1980). Mitigation efforts at one of these sites (21C4-29) revealed over 300 pit features with associated early Late Woodland Raymond-like ceramics. Preliminary analysis of carbonized nut shell and white-tail deer remains recovered suggests that this site functioned as an autumn field camp.

Recent archaeological investigations identified two Late Woodland components on intermittent tributaries of the Beaucoup Creek (Powell et al. 1981) and one on an intermittent tributary of the Little Muddy River (Powell et al. 1982b). These sites consisted of light scatters of lithic debitage and a few grit tempered ceramic sherds.

An archaeological survey at the headwaters of the Little Muddy River located one small site of Late Woodland affiliation (Powell et al. 1982a). A survey of the upland divide between the Marys and Big Muddy River drainages identified three Late Woodland components (Van Hoy 1980). Late Woodland components at all three sites were identified on the basis of a single grit tempered sherd. The FAP-410 (Williams and Woods 1978) project located two Late Woodland sites in the Marys River drainage system. Site R-401 was an isolated projectile point, found in the uplands, at the extreme east end of the Eden Field research area. The other site is the McIntrye site (R-402), which is located within the present study area. The FAP-410 transect crossed only a small wooded portion of this large Woodland village site, which occupies two terminal ridge spurs and the entire top of a ridge system on the east side of the Marys River. Based on the density of material recovered from their shovel tests, Williams and Woods (1978) suggested the site was of National Register quality. Additional investigations near the confluence of the St. Marys and Mississippi rivers revealed two bluff-top Late Woodland sites (Hutto and Butler 1981).

Mississippian Period (A.D. 900-ca. A.D. 1500)

Mississippian culture represents the culmination of social, economic, political, and technological trends begun in the Late Woodland period. The period is marked by an increased dependency upon agriculture as a subsistence base and increased social stratification and complexity. Settlement patterns are characterized by large regional population centers surrounded by a radiating network of agricultural and special purpose sites. The large regional centers most often contained flat-topped mounds, plazas, and fortifications and are interpreted as functioning in both ceremonial and economic activities.

Artifacts indicative of Mississippian material culture include shell-tempered pottery, finely-made Madison and Cahokia projectile points, and farming implements, e.g., hoes and hoe chips. Usually, the presence on a site of hoe chips and ceramic wares is indicative of agricultural activities; and, generally, small artifact scatters including such materials are interpreted as farmsteads (Harn 1971:36).

Cahokia, near East St. Louis, was the site of the most spectacular prehistoric center to develop in North America. The social, political, and economic dominance of Cahokia is most prevalent during Early Mississippian times. This dominance tends to dissappear by the beginnings of the Late Mississippian cultures, ca. A.D. 1300 (Harn 1980:22). In all, the Cahokia site covers 5 mi^2 of the Mississippi River floodplain, containing approximately 120 mounds, the largest of which (Monks Mound) stands 100 ft high (Fowler 1974).

Following the decline of Cahokia, Late Mississippian culture represents a period of regional differentiation (ca. A.D. 1300-1600). The manufacture of characteristic Mississippian artifacts persists, and mound construction, although of diminished importance, continues. Temporally, the Late Mississippian cultures overlap with what Fowler and Hall (1975:7-9) refer to as the Sand Prairie phase (A.D. 1250-A.D. 1500). Willey (1966:309-310), among others, believes that the terminal prehistoric Fort Ancient and protohistoric Oneota cultures have their genesis in the upper (e.g., Late) Mississippian culture.

Other major Mississippian mound groups and village sites include the Common Field site, located in the American Bottom across the Mississippi River from the mouth of the Kaskaskia, and the Kincaid site on the Ohio River in extreme southern Illinois (Cole 1951).

Archaeological sites in the Kaskaskia River valley were located and investigated during several projects in the 1960s and 1970s including the Carlyle Reservoir Project (Binford 1962), the Lower Kaskaskia Canalization Project (Conrad 1966), and the Lower Kaskaskia survey (Iseminger and McNerney 1973). Subsequently, a number of sites located both in the Carlyle Reservoir area and on the Lower Kaskaskia were excavated, and Middle Woodland (Crab Orchard with Havana influence), Late Woodland (Raymond and Dillinger-like), and Mississippian components were identified (Binford et al. 1966; Fowler 1961; Kuttruff 1969; Morrell 1965; Rackerby 1966, 1968; Salzer 1963). In 1976, the Illinois Department of Conservation (Fortier 1981) prepared a predictive model for archaeological site locations in the Kaskaskia River drainage. The report compares archaeological resource zones with site locations. Presently, the Center for Archaeological Investigations, Southern Illinois University at Carbondale, is completing analysis of materials excavated at the Kingfish site near New Athens.

Mississippian sites in the till plains are identified by the presence of shell tempered, smooth surfaced pottery, unnotched triangular arrow points, and abundant midden accumulation. In the upper Kaskaskia River valley, Mississippian occupations do not seem to be associated directly or to have ancillary relationships with the Cahokia center (Rackerby 1968:88-92). Sites appear to be small farmsteads, occupied year-round as part of a dispersed settlement system. Subsistence pursuits include corn agriculture, supplemented by hunting and collecting. Excavations at the Toothsome site revealed a small year-round farmstead (Binford 1962:4-55). In addition, excavations at Galley Pond recovered an extensive mortuary structure including stone box burials (Binford 1962:58-107). In general, Mississippian settlement in the Kaskaskia River area indicates the utilization of secondary perennial

streams for agricultural purposes throughout the cultural developments evident at Cahokia.

Mississippian sites in the Big Muddy drainage appear as small farmsteads. McNerney (1974) recovered evidence of Mississippian habitation and stone box graves at the Brune site (21D3-9) on Galum Creek. Ceramics at this site suggested a relationship to the terminal Sand Prairie phase at Cahokia. At the Consol site (Map 3, site 5), on the Little Muddy River, two Mississippian houses were identified, one of which yielded a radiocarbon date of A.D. 1210 (McNerney 1981:personal communication).

Recently, two Mississippian wall trench house structures and associated smudge pits containing carbonized corn cobs were excavated at site 21C4-29, located on upper Galum Creek in Perry County (Powell 1981:personal communication). A stone box grave site, located near the confluence of the Galum, Bonnie, and Rock Fork creeks, contains approximately five disturbed burials (Haas and McNerney 1980).

Only one Mississippian site has been recorded in the Marys River vicinity. This is a small, low artifact density site (24A2-226) located near the headwaters of an intermittent stream which drains directly into the Mississippi River floodplain (Van Hoy 1980). Although neither the Burning Star #3 survey (Powell et al. 1982a) nor the FAP-410 project recorded any Mississippian components in the Marys River drainage, this may be the product of surveys focused on the uplands rather than a real absence of Mississippian sites in this restricted drainage system.

Protohistoric Period (ca. A.D. 1400-1673)

Little is known concerning protohistoric occupations in the southern Illinois area. Present overviews of Illinois archaeological resources (Downer 1980) indicate that protohistoric cultural traditions are defined much better for the northern part of the state than the southern regions. Although Oneota ceramics have been recovered from the Cahokia site, it is not known whether this represents an occupation district or is contemporaneous with Late Mississippian (Fowler and Hall 1975:9; Hall 1975:30).

Oneota culture is believed to be roughly contemporaneous with the Fort Ancient and Iroquois cultures to the east and represents a mixture of Woodland and Mississippian cultural traditions (Willey 1966:309-310). Generally accepted dates for Oneota in Illinois span ca. A.D. 1380 to ca. A.D. 1700 (Downer 1980:59).

Historic Amer-Indian Period (A.D. 1673-1832)

The beginning of the historic period in Illinois is marked by the arrival of French explorers and missionaries into the Illinois country, beginning with the Marquette and Joliet expedition in 1673. At that time, Illinois was inhabited by various Algonquian-speaking peoples, most notably the loosely-knit Illini confederacy, composed of the Cahokia, Kaskaskia, Michigamea, Peoria, Tamoroa, and perhaps as many as seven other named groups (cf. Temple 1966).

Illinois settlement and subsistence patterns were characterized by the establishment of villages, limited agriculture, and extensive hunting. At the time of European contact, the Illini were under pressure from other Algonquian groups in adjacent regions, themselves responding to European colonization and expansion. As the Illini were driven west and south beginning with the Iroquois expansion in the 1660s, they took up residence at French settlements, e.g., Kaskaskia and Fort de Chartres.

Few archaeological investigations have been conducted at historic period Amer-Indian sites in Illinois. One locality, the Guebert site, is a historic Kaskaskia Indian village known through large surface collections. It was occuppied between 1719 and 1833, mostly during the French occupation of the area (Good 1972:ix, 4). Most investigations are generally in conjunction with the excavation of early French forts at or near which Illini groups took refuge from other Indian groups expanding into Illini territory.

Northern groups such as the Sauk, Fox, Kickapoo, Mascoutens, and Potawatami began pressuring the Illini in the 1720s, forcing them out of northern and central Illinois by 1769 (Bauxar 1978; Callender 1978:677-678). These groups practiced seasonal-round subsistence patterns, spending the summers near fishing areas and winters in the woods (Maple 1912:38). These groups, in turn, were displaced by American settlers and military by the 1830s.

While Illini relations with the French settlers were relatively friendly, subsequent contact with the British and then the Americans were less than cordial. By 1832, all Illini lands in Illinois either had been sold or ceded to European-Americans. The remnant of the Illini, with little of their traditional native culture intact, settled on a reservation in eastern Kansas (Callender 1978:679).

Historic Overview

Introduction

Research in the White Walnut Creek study area necessitated the development of a cultural-historical framework within which to assess and evaluate historical resources. The cultural periods which form the chronological divisions of this scheme are: Explorer, 1673-1700; Colonial/Frontier, 1700-1780; Pioneer, 1780-1850; Early Agricultural, 1850-1900; and Agricultural/Industrial, 1900-present (Figure 4). These temporal divisions are based on political, social, and technological developments in southern Illinois over the past 300 years. The primary purposes for developing this framework are to aid in evaluating historic archaeological resources for National Register significance, better organize historical research information, develop historical research problems, and integrate regional historic archaeological data. Of course, additional local, regional, and area research must be conducted to refine this scheme and to establish its utility for future research in southern Illinois.

Explorer Period (1673-1700)

The Explorer period in Illinois began with the Marquette and Joliet

Figure 4

Historic Periods in Illinois

1980		
1960		
1940	Agricultural/ Industrial Period	World War II (1939-1945)
1920		World War I (1914-1918)
1900		
1880	Early Agricultural Period	
1860		Civil War (1861-1865)
		Illinois Central Railroad (1850)
1840		
1820	Pioneer Period	Statehood (1818)
		Illinois Territory (1809)
1800		
1780		Americans Occupy Kaskaskia (1778)
1760		British Gain Control of Illinois (1763)
1740	Colonial/ Frontier Period	
1720		Fort de Chartes (1720)
1700		Village of Kaskaskia (1703)
1680	Explorer Period	Fort Crevecouer (1680)
		Marquette and Joliet Expedition (1673)
1660	Protohistoric Period	

expedition down the Mississippi River in 1673. Earlier, Spain, England, France, and Holland had carried out explorations in other parts of the New World and the eastern United States, but the French trip from Canada serves as a convenient marker for the beginning of the historic period in this area. Their journey also marked the first major thrust by the French into Illinois.

French interest in the area was maintained and followed by a visit by Robert Cavalier de La Salle. He reached the mouth of the Mississippi in 1682 and claimed all the land bordering it and its tributaries for France, naming the new territory Louisiana in honor of Louis XIV.

Prior to the founding of Kaskaskia, two attempts were made to establish settlements in Illinois. While making preparations to descend the Mississippi River in 1680, La Salle erected a fort on the Illinois River below Lake Peoria. The fort was named Crevecoeur and marked the first military occupation of Illinois. However, the fort was abandoned a few months later (McDonough 1883:26).

The second attempt also was made by La Salle in 1682. He built a fortification at Starved Rock named Fort St. Louis. The stronghold became a trading center as various tribes settled in the area but was abandoned around 1700 (McDonough 1883:26).

In 1699, Pierre LeMoyne, Sieur de Iberville, sailed from the mouth of the Mississippi River and built Fort Maurepas on Biloxi Bay. This marked the beginning of permanent settlement by the French on the Gulf Coast and acted as an anchor for French claims on the Gulf and the lower Mississippi valley region. The end of the century marked the establishment of French presence in the upper and lower Mississippi valley.

Colonial/Frontier Period (1700-1780)

The Colonial/Frontier period is characterized by economic competition and political turmoil. Britain, France, and America bartered for the furs, land, and the allegiance of diverse native American groups. In this immediate area, this period began with the founding of Kaskaskia and reached a turning point with the capture of Kaskaskia by George Rogers Clark and his small army of Americans in 1778. In 1703, Jesuit missionaries, Kaskaskia Indians, and a group of fur traders moved south from the Des Peres River and founded the village of Kaskaskia just north of the present town of Chester, Illinois (Orser and Karamanski 1977:4).

The early 1700s was also a time of French fort construction in the area, extending from the Great Lakes down the Mississippi River. In 1701, Fort Pontchartrain was constructed at Detroit followed by Fort Miami (1712?) at the present site of Fort Wayne, Indiana. Fort Ascension, later Fort Massac, was constructed near present-day Metropolis, Illinois, in 1757. On the Mississippi, Fort de Chartres had been established by Boisbriant as early as 1720 (Alvord 1920:153), and Fort Kaskaskia may have been built as early as 1734 (Orser and Karamanski 1977:14). By the mid-1770s, the French had built a line of forts from the Great Lakes to the Mississippi by way of the Ohio and its tributaries in an effort to secure the upper Ohio region from the English (Smith 1912:64-65).

French interest in the Mississippi valley was intensified with the arrival of Pierre de Gue de Boisbriant at Mobile in 1718. He arrived with a commission that established him as commandant of the Illinois Country and Jean-Baptiste LeMoyne de Bienville as governor general of the Louisiana Territory. While the English considered their ownership of the region legal by the Charter of 1607, the French claimed the Mississippi valley by right of discovery. In approximately 1720, Phillippe Renault, who was the director of mines for the Company of the West, sent miners and workmen out from his temporary headquarters at Fort de Chartres to search the bluffs rimming the American Bottom for precious metals (Schlarman 1929:195).

The need for better methods of civil administration became apparent with the rapid population growth from the 1720s onward. In 1721, the Mississippi valley was divided into nine civil jurisdictions, with Illinois being one of them (O'Neill 1966:128). At this time, the name "Illinois Country" was used primarily in reference to the alluvial land between the Mississippi River and the high bluffs which stretch from Chester to Alton. The early French villages of Kaskaskia and Cahokia were located in this area. Control of the Illinois Country was transferred formally from France to England at the end of the French and Indian War and the signing of the 1763 Peace of Paris. Fort de Chartres was surrendered to the British in October 1765 (Schlarman 1929:397) and renamed Fort Cavendish, which became the capital for Britain's western lands. In spite of the proclamations of George III prohibiting English citizens from settling west of the Alleghenies, many explorers, settlers, and adventurers moved through gaps in the Alleghenies into what is now West Virginia, Kentucky, and Tennessee. Increased infiltration of British settlers into formerly French-controlled territory, combined with the automatic transfer of the territory to the British king, resulted in unrest among the French and Indians living in the western lands. During this transition period, many of the Indians, under the leadership of the Ottawa chief Pontiac, mounted a campaign against the British and attacked and captured many of their forts (Jacobs 1972:83-93).

During the Revolutionary War, control of the eastern half of the continent was wrested from the British. Coupled with the Louisiana Purchase of 1803 from France, the stage was set for first a trickle and then a flood of immigration from the East and Southeast.

Pioneer Period (1780-1850)

By the early fall of 1778, the Virginia legislature made Illinois a county of Virginia, encompassing all the area west of the Ohio and establishing Kaskaskia as the seat of government. On December 20, 1783, Virginia ceded the Illinois Country to the United States. The Ordinance of 1787, passed by the Continental Congress, established the Ohio Territory out of all the lands northwest of the Ohio, and Marietta was made the capital. St. Clair County was formed in 1790 out of the western part of the Ohio Territory, and Randolph County was formed out of the southern part of St. Clair County in 1795 (Smith 1912:523).

On May 7, 1800, the present areas of Illinois, Indiana, Wisconsin, and Michigan were divided from the remainder of the Northwest Territory and became known as the Indiana Territory. The capital was at Vincennes, and William

Henry Harrison became governor. However, the inconvenience of traveling from Illinois to Vincennes through uninhabited country, coupled with the proslavery sentiment which prevailed in Illinois, caused the residents of Illinois to push for a separate territorial status. On February 3, 1809, the Indiana Territory was subdivided into the Illinois and Indiana territories, and the seat of government for the newly created Illinois Territory was established at Kaskaskia (Smith 1912:104-108).

The establishment of a land office at Kaskaskia in 1804 did much to encourage immigration to Illinois. Land was abundant and inexpensive. Although the formation of the new Illinois Territory promoted migration of settlers to Illinois, several factors affected movement into Illinois at the turn of the nineteenth century. Until 1809, when the Illinois Territory was organized formally and Kaskaskia was established as the seat of government, those pioneers who ventured into the present area of southern Illinois were compelled to travel through uninhabited country to Vincennes, an unattractive proposition to even the hardiest of settlers. The establishment of land offices in Kaskaskia (1804) and Shawneetown (1812) promoted a sense of stability and security on the frontier. As a result, the population of Illinois increased from 2,500 in 1800 to 12,282 in 1810.

As early as 1795, the Bird family is reported to have settled at the confluence of the Ohio and Mississippi rivers in modern-day Alexander County (Lansden 1976:258). This was the earliest permanent settlement in the 11 counties comprising southern Illinois. By 1799, the increase in river traffic necessitated the creation of two duty collection districts, one of which included Fort Massac. The importance of Shawneetown as a gateway to Illinois and points further west dates from around 1800, when Michael Sprinkle is believed to have settled there (Allen 1968:341). In the same year, Lusk's ferry opened for business in Golconda. Around 1802, Alexander Wilson came to Shawneetown and soon began operating a ferry across the Ohio River, followed by William McFarlan's ferry which opened in Elizabethtown around 1808. The early pioneers made their way to one of these points of entry as they followed the Ohio, Tennessee, and Cumberland rivers from the southern and eastern states. After these points of entry had been established providing direct and convenient access to Illinois, it became easier for immigrants to penetrate to the interior of southern Illinois via early Indian trails.

As the territory was divided and subdivided, the claim of the Indians to their hunting grounds was ceded gradually until nearly all of their land in Indiana and Illinois had been relinquished. As their hunting territory decreased in size, their discontent increased until they were moved to unite under such leaders as Tecumseh, who was actively inciting the Indians to violence. Several massacres occurred in the region of the Illinois River, and the Battle of Tippecanoe was fought on November 6, 1811. Hostility increased until 1812, when Indians in the Midwest and particularly around the Great Lakes sided with the British in the War of 1812.

During the period of Indian uprisings, Ninian Edwards, Governor of Illinois, actively promoted the establishment of defenses for American settlements in the Illinois Territory. It was at this time that blockhouses and forts were built, reaching across southern Illinois, as early settlers invariably met Indian opposition to encroachment on their traditional hunting

grounds. By 1811, several blockhouses had been built in Williamson County, Jordan's Fort being one of the earliest (Parks n.d.). The Rude blockhouse near Somerset in Saline County, built in 1814, and other blockhouses built within Saline County as late as 1815 are indicative of Indian/pioneer confrontations which continued past the War of 1812 (Mohlenbrock 1977:20).

Early life in southern Illinois closely resembled that of the southern states, the original home of the earliest settlers. The first type of pioneer -- the hunter and woodsman -- arrived in the new frontier, presumably desiring isolation and abundant game. He constructed only a crude log cabin to provide basic shelter for his family, cleared only enough land to plant basic crops, and hunted and fished. As game resources were depleted and other settlers encroached upon his privacy, the hunter/pioneer moved his family further west to new wildernesses.

The second type of pioneer was more agriculturally oriented. He was searching for good, inexpensive land where he could settle and establish a new life, free from the restrictions of the older and more crowded southern states with depleted soils. This class of settler brought only the basics for homesteading. Previous experiences in the frontier made him resourceful and self-sufficient. He first selected a good site on which to homestead, choosing a prairie with an adjacent timber supply, when possible. Enough ground was then cleared to plant a minimal crop of corn to last through the winter. Once the basic food supply had been secured, a temporary log structure was constructed with a wattle-and-daub chimney and wood-shingled roof. The product of the first construction was often a one-room log dwelling, about 16 by 18 ft. This building served until the demands of an increasing family required the expansion of the original structure and time and finances permitted such expansion. Often the initial cabin had no floor and was finished with crude, handmade fixtures made of split logs known as puncheons. Later, log structures were constructed more carefully of corner-notched hewn logs, daubed with lime mortar rather than mud, and with masonry fireplaces. Interiors were finished neatly with closely fitted boards. Occasionally, clapboards were applied to the exterior for added weatherproofing, and windows had glass panes.

The great expense involved in breaking the prairie sod restricted prairie farming to men of capital rather than the ordinary pioneer with few resources (Gates 1960:181). Prairie bluestem has deep, thick, coarse root systems, nearly impenetrable by the wooden moldboards and cast iron plows from the East. The development of the cast steel bottom plow by John Deere in 1837 and others opened the prairie to all with agricultural desires.

Early Agricultural (1850-1900)

The Internal Improvement Act (1837) laid the groundwork for establishing a statewide railroad system, although it was not until 1850 that the Illinois Central Railroad was organized as a land-grant railroad, financed in part by mortgages on its grants and aid from municipalities and counties (Gates 1960:185-186). After 1856, when the line from Chicago to Cairo was completed, the period of railroad expansion began, and small towns and villages developed along the full length of the railroad (Corliss 1950:15-21).

Immigration, settlement, farm development, and railroad construction were all interdependent. The railroad brought lumber, farm machinery, breeding stock, and household equipment to the farms. In turn, hogs, wheat, and cattle were shipped to Chicago, St. Louis, and the East. Several independent railroads also were built in southern Illinois until the early 1900s to facilitate local transportation needs.

Cotton and tobacco, introduced by the early southern immigrants to southern Illinois, played a significant role in the economic life of the area prior to and until shortly after the Civil War. However, the uncertain climate and governmental regulations brought about their abandonment as cash crops. Truck farming and some fruit growing and processing figured prominently in the economy of southern Illinois during the latter half of the nineteenth and early twentieth centuries.

Coal mining had an early beginning in southern Illinois when William Boone built a barge at Brownsville, loaded it with coal, and floated it downstream to New Orleans (Thilenus and Snider 1968:34). Although a coal mine was operating in Jackson County by 1810, it was not until the middle and latter part of the nineteenth century that coal mining became an important part of the economic life of southern Illinois.

The population of southern Illinois continued to grow during the second half of the nineteenth century, peaking between 1850 and 1870. Numerous grist mills and cotton gins were built throughout southern Illinois (Mohlenbrock 1976:16-17). By this period, towns and villages were well established and thriving economically. This prosperity was due to the railroad and the development of some industry toward the end of the century.

Agricultural/Industrial (1900-Present)

Only a small number of the early industries have retained importance to the economy of southern Illinois. Of the early industrial activities, those that have remained most important to the livelihood of southern Illinois are agriculture, quarrying, and mining. The fluorspar district in southern Illinois (Hardin and Pope counties) is the nation's leading producer of this scarce mineral. Although its earliest uses were tied to the metallurgical industry, fluorspar is now used widely in the production of chemicals and ceramics (Executive Committee on Southern Illinois 1949:107).

During the early 1930s, coal mining experienced a decline in much of southern Illinois as did other industries. When economic depression set in, many miners were forced to leave the area in order to seek employment in the North. Today, however, coal mining is one of the major industries in the area.

Many deposits of stone of southern Illinois have been quarried for construction, industrial, and chemical uses. Sand and gravel taken from sandbars in the Mississippi, Ohio, and Wabash rivers are used for road and building construction (Executive Committee on Southern Illinois 1949:110-111).

Historic Archaeological Investigations

Archaeological excavations have been conducted on sites representing these historic periods. During the Explorer (1673-1700) and Colonial/Frontier (1700-1780) periods, fortifications were constructed, protecting the inhabitants from local Indians. Fort de Chartres is an excavated French fortification built in 1721 along the Mississippi River (Brown 1976). There were two rebuildings of this fort with a change of hands to the British before its abandonment in 1772 when a wall collapsed into the river (M. Brown 1977:23-28). Excavations at Fort Massac, a French military installation near Metropolis in extreme southern Illinois, indicate that there were probably two building periods at the site (Rackerby n.d.:4). Fort Kaskaskia, located on the bluffs above the Mississippi River, was also a French fortification. This partially excavated site was constructed by 1760, possibly as early as 1734, and abandoned by the British in 1814 (Orser and Karamanski 1977:13-14, 35).

During the Pioneer period (1780-1850), settlements began to develop in what was then the frontier. In southeast Missouri, Price (1979) conducted investigations at a pioneer cabin site of the early nineteenth century. Excavations and analysis of materials from the Jenkins site in Grand Tower, Illinois, is helping to establish if the building, constructed in 1829, was used as a general store in the 1840s. The materials excavated date between the 1820s and the 1870s (Powell 1981:personal communication).

Excavation on grounds around the former State Bank (1839) at Shawneetown revealed the remains of a brick building. It was located on the north side of, and parallel to, the existing bank structure. The actual use of the structure has not been determined. Material recovered from the site date from 1762 through the second quarter of the twentieth century when a well was used as a refuse pit (Orser 1978:38).

It has been only recently that sites of the Early Agriculture period (1850-1900) have been investigated. The Alorton site, located in Alorton, Illinois, near East St. Louis, was a mid-nineteenth century homestead (Powell 1981:personal communication). The basement of one structure has been excavated in the extinct town of Brownsville in Jackson County, Illinois. The material excavated dates between the early and mid-nineteenth century (Butler 1980:personal communication). Analysis of historic material is currently underway from the Carrier Mills archaeological district near Carrier Mills in Saline County, Illinois. Some of the material dates from the early nineteenth century to the mid- and late-nineteenth century. Material from one area dates to the Depression era of the twentieth century, the Agricultural/Industrial period (1900-present) (Butler 1980:personal communication).

Early Perry County

In the early nineteenth century, the Perry County area was still being visited by the Kaskaskia Indians of the Mississippi valley, who often held their fall hunts along the Big and Little Muddy rivers, camping southeast of Old DuQuoin (Dearinger 1975:19). Early white settlers on Four Mile Prairie found evidence of a recent battle there, probably between the local Kaskaskia and the Kickapoo, a group who lived further north in central Illinois (McDonough 1883:473). As late as 1816, the Kaskaskia were camped along

Beaucoup Creek near Hutchings Prairie (Map 4) in Beaucoup Township (McDonough 1883:473).

Much of Perry County was originally wooded, although there were numerous prairie lands scattered throughout the area. The county first began to be settled in the early nineteenth century with most of the earliest settlers coming from the Carolinas, Tennessee, and Kentucky. Generally, they chose to settle on the more elevated, well drained areas which bordered prairie regions. Four Mile Prairie was one of the first regions in Perry County to be settled.

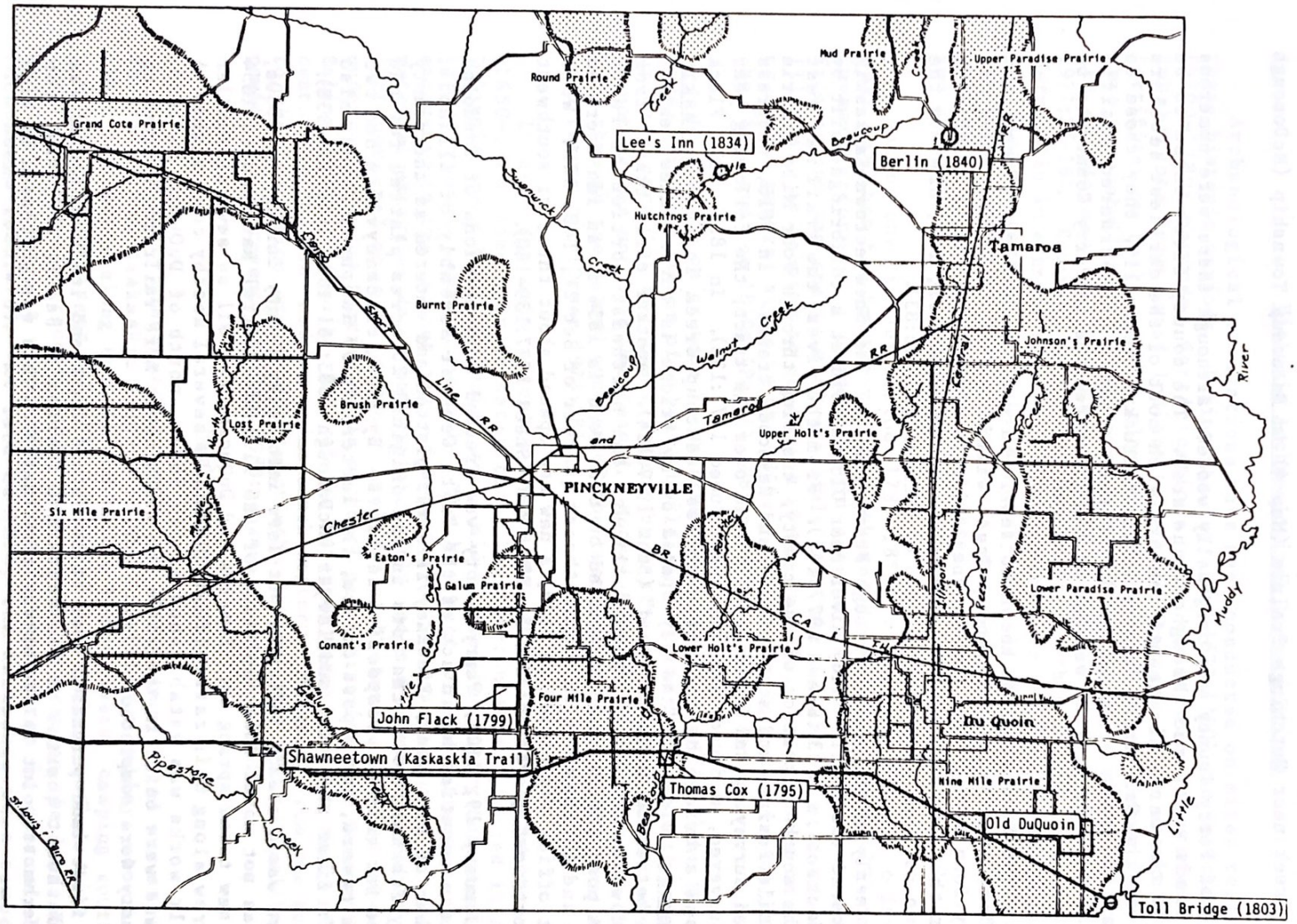
The first Euro-American known to settle in what is now Perry County was Thomas Cox, who lived on Beaucoup Creek within Sec 17, TS6, R2W. Cox was joined by John Flack, who came to the region in 1799. Flack built a cabin on a hill in the west half of the southwest quarter of Sec 11, T4S, R2W, in the area known as Four Mile Prairie (Map 4) (McDonough 1883:83).

Two early roads passed through Perry County. The Shawneetown-Kaskaskia trail crossed the Little Muddy River near Old DuQuoin at a tollbridge built by Jerald Jackson in 1803 (Sneed 1977:141). From the river, the trail ran west across the southern portion of the county, crossing through Four Mile Prairie and Six Mile Prairie and across Galum and Beaucoup creeks. In 1816, Congress authorized surveying and building of a road over the tract; the following year it was surveyed, widened, and improved (Sneed 1977:138). In 1818, John Flack advertised a bridge he had built across Beaucoup Creek in the Kaskaskia Intelligencer, claiming "the way opened by my bridge is three miles nearer, and much better than the old road" (Buck 1917:124). Another early trail, from Shawneetown to St. Louis, passed through the northeast portion of Perry County. A post office was established on this road in 1834 at an inn operated by Isaac and Abraham Lee in the northeast quarter of Sec 21, T4S, R2W. When this post office was closed in 1839, a new one opened about three mi southwest in the northwest quarter of Sec 5, T5S, R1W (Sneed 1977:139-140).

On January 19, 1827, Perry County was created from portions of Randolph and Jackson counties by an act of the Fifth General Assembly of Illinois. In December of that year, Pinckneyville was platted and entered as the county seat. By February 1828, the lots in the original 20 acres platted for the town were for sale to prospective settlers. By 1830, Pinckneyville had two stores, a tavern, and a post office, the latter run by Humphrey Jones, also the town's first physician and lawyer (McDonough 1883:161-162, 166, 336-338).

There was a steady influx of settlers into Perry County during the 1830s, but it was not until the completion of the Illinois Central Railroad in 1854 that any new towns sprang up. Tamaroa and DuQuoin, as well as several smaller towns, grew along this railroad, supported by several nearby coal mines. A large salt works was established in St. Johns, north of DuQuoin in 1879. Other towns were built in the 1870s and 1880s after more railroads traversing Perry County were completed.

The first land purchased near White Walnut Creek and its tributaries was in the southeast quarter of the southeast quarter of Sec 9, T5S, R2W, the southeasternmost point in the survey area (Map 5). This was purchased by Rice



MAP 4

Historic Sites and Prairies of Perry County
(adapted from Union Atlas Company, 1876)

Benson on June 25, 1836, and was passed on to Samuel Benson two years later (Table 2).

Sections 4, 8, and 10 were included in those lands granted by Congress, through the State of Illinois, to the Illinois Central Railroad in 1852 as part of the 1850 Congressional Act to finance the railroad. These lands sold for $1.25 an acre and were bought slowly by various individuals from 1853 to as late as 1894 (Table 2). Some quarter sections remained within the family of the original purchaser well into the twentieth century, such as that of August Lehman and James F. Gregory, landowners in Sec 4.

It is not possible to determine through the historical records exactly when and where structures were built in the survey area. A 1902 atlas of Perry County, however, indicates that most of the farm houses had been established by that time (Map 5).

Pinckneyville Township. The first land entries in Pinckneyville township (T5S, R3W) were located along Galum Creek and in and around Four Mile Prairie (Table 3).

In 1826, Ephraim Bilderback and Charles Garner settled in the southwest portion of Four Mile Prairie. Abner Flack, who had surveyed the Shawneetown-Kaskaskia post road in 1817, also settled on Four Mile Prairie. Mathew Jones, John Hazzard, and John Berry of Tennessee settled on the west side of Holt's Prairie east of Pinckneyville. In 1827, Afton Crawford located on the south end of Four Mile Prairie, and Jonathan Petit settled in Sec 25, just south of Pinckneyville. Fergus Milligan, his wife, and nine children, of Iredell County, North Carolina, first settled 3 mi northwest of Pinckneyville, then moved to Four Mile Prairie in the southwest quarter of the southeast quarter of Sec 11, T6, R3W. In 1828, James Steel settled in Four Mile Prairie. He was joined by William Craig in 1829 (McDonough 1883:85).

Tamaroa Township. In 1815, David Rees settled in Sec 21, T4S, R1W. His brother, Edward Rees, settled further south on Reeses Creek. Around 1826, David Deal, with his wife, two sons, and four daughters, settled in Sec 28. A year later, Abraham Morgan and his family settled on Little Beaucoup creek in the southwest quarter of the northeast quarter of Sec 18 (McDonough 1883:85). Joseph B. Curlee, a native of North Carolina, had originally settled in Fayette County, then had moved to Washington County near Nashville before coming to Perry County in 1828 (Sneed 1977:134). He settled in Sec 17, near Upper Paradise Prairie, as did Benjamin Hammack, his wife, and four children, and Stephen Brown (McDonough 1883:85). Curlee's son, Nathaniel, platted the village of Berlin in this section in 1840. At one time, Berlin had a store, a Methodist church, and at least 10 houses (Sneed 1977:134-135).

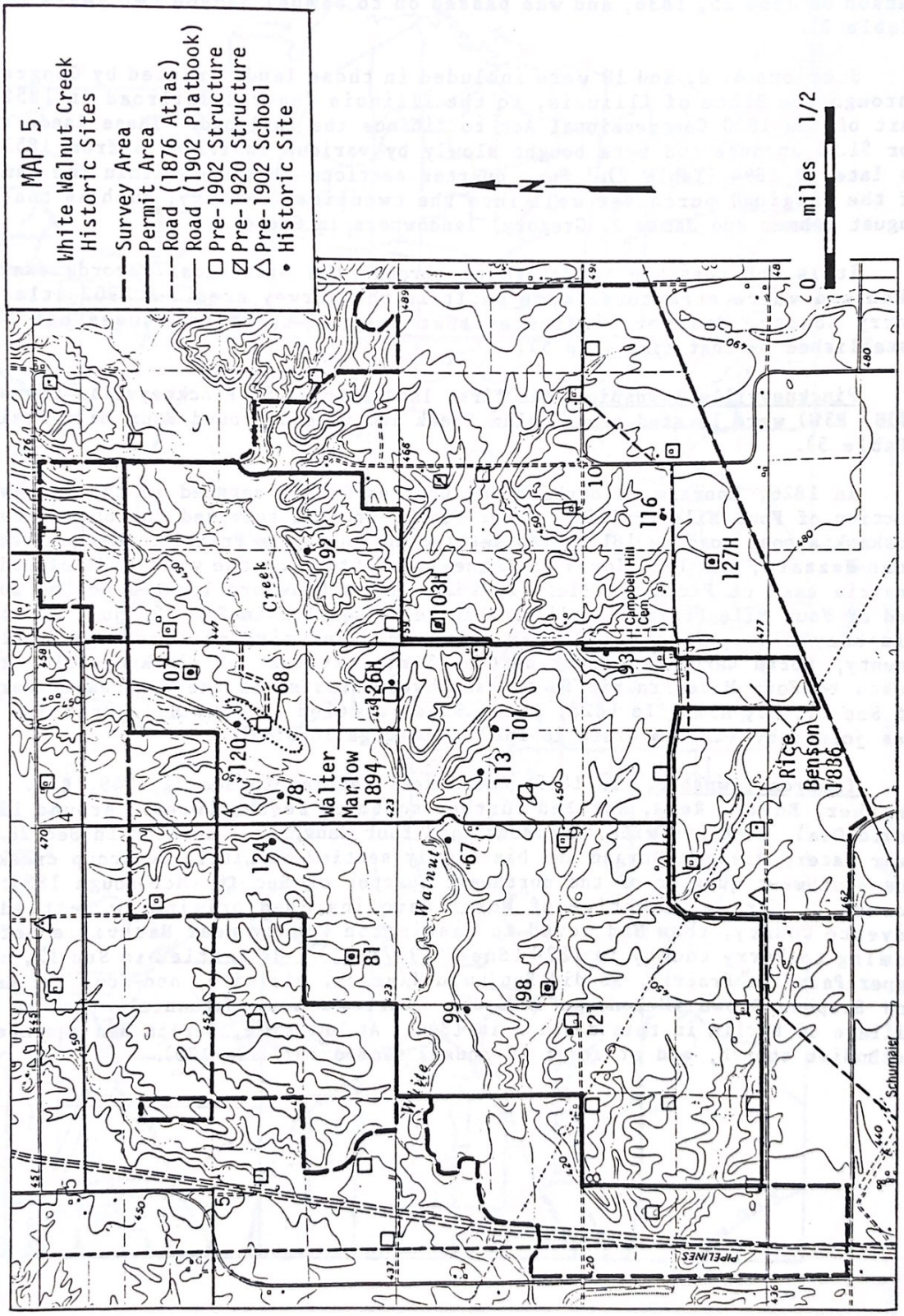

MAP 5
White Walnut Creek
Historic Sites
Survey Area
Permit Area
Road (1876 Atlas)
Road (1902 Platbook)
Pre-1902 Structure
Pre-1920 Structure
Pre-1902 School
Historic Site
N
0
miles 1/2
Walter Marlow 1894
Rice Benson 1886
Campbell Hill Cem.
Walnut Creek
White
Schumaier
PIPELINES

Table 2

19th Century Land Purchases in White Walnut Creek Study Area

Rice Benson	SE1/4 SE1/4 Sec 9	June 25, 1836
Richard Marlow	NE1/4 SE1/4 Sec 9	July 15, 1840
Margaret Abernathy	NE1/4 Sec 9	September 28, 1841
Sterling C. Marlow	SW1/4 SE1/4 Sec 9	January 7, 1844
Sterling C. Marlow	SE1/4 SW1/4 Sec 9	January 22, 1844
Richard Marlow	NW1/4 SE1/4 Sec 9	August 8, 1844
Richard Marlow	N 1/2 SW1/4 Sec 9 S 1/2 NW1/4 Sec 9	May 16, 1848
Rueben H. Davis (sold the same year to Basdel Marlow)	SW1/4 SW1/4 Sec 9	January 19, 1853
Thomas Metcalf	NE1/4 SE1/4 Sec 4	June 23, 1853
Milas M. Marlow	SW1/4 NW1/4 Sec 3	June 28, 1853
Alfred H. Edwards	SW1/4 Sec 3	May 17, 1853
Nathaniel Buchanan	N 1/2 NW1/4 Sec 9	April 30, 1857
Hiram Robinson	SE1/4 SE1/4 Sec 8	November 27, 1865
John J. Jones	NE1/4 SE1/4 Sec 8	August 31, 1868
Henry Miller	SW1/4 SW1/4 Sec 4	January 30, 1869
Bartley Marlow	NE1/4 SW1/4 Sec 10	February 28, 1870
James I. Primm	SW1/4 SE1/4 Sec 8	July 30, 1870
Tyra Marlow	NW1/4 SE1/4 Sec 8	October 31, 1870
Axie Ann Robinson	NW1/4 NW1/4 Sec 10	July 31, 1871
John C. Strawbridge	SW1/4 NW1/4 Sec 10	September 30, 1871
Christian Hopp	NE1/4 SW1/4 Sec 4	May 15, 1874
Frederick Kuhn (Kuhn acquired the adjoining NE1/4 NE1/4 Sec 8 by 1888)	SE1/4 NE1/4 Sec 8	November 4, 1882
Walter Marlow	SE1/4 NE1/4 Sec 4	July 19, 1886
August Lehman	SW1/4 SE1/4 Sec 4	November 2, 1886
James F. Gregory	SE1/4 SW1/4 Sec 4	November 19, 1886
August Lehman	SW1/4 SE1/4 Sec 4	March 20, 1893
Walter Marlow	SE1/4 SE1/4 Sec 4	April 27, 1894

Table 3

Early Land Purchases in Pinckneyville Township

James Flack	W1/2 SW1/4	Sec 14	1813
John Flack	NE1/4	Sec 22	1814
William McIntosh		Sec 27	1815
S. Lavapein	S1/2	Sec 10	April 25, 1815
Alexander Douglass	N1/2	Sec 10	April 25, 1815
Roger Claxton	SW1/4	Sec 34	1819
Benjamin Brown	W1/2 NE1/4	Sec 19	?
Joshua Davis	E1/2 SE1/4 (T5S, R3W)	Sec 34 (McDonough 1883:337)	1818

RESEARCH DESIGN

Introduction

The primary considerations which guided this research was the fulfillment of the contractual obligations to locate, evaluate, and report on cultural resources that may be contained in the project area and to complete the assessment without impeding mining activities. Specifically, these primary research objectives were: (1) to locate all prehistoric and historic archaeological sites within the research area, (2) to evaluate and assess these resources for significance based on the National Register of Historic Places (NRHP) criteria, and (3) to produce a final draft report of the Phase I research 12 months after the initiation of the project, the report to include the results of the research and provide recommendations for any Phase III mitigation.

Incorporated with these contractual objectives were the following research objectives. Specifically, these objectives were: (1) to research and document the historic settlement and use within the research area, (2) to develop an environmental base line for future Phase II and Phase III research and for future research by reconstructing the presettlement vegetation using the 1807 and 1810 GLO surveys, and (3) to develop specific prehistoric settlement-subsistence and socioeconomic hypotheses for testing during Phase III research. In regard to the last objective, a cultural ecological orientation was adapted for the formulation of specific questions and hypotheses.

Research Orientation

For the purpose of this study, a cultural ecological orientation served as a guideline for construction of research problems relevant to the identification of cultural processes which were active in southern Illinois. The major theme for research is one of culture change and continuity. Emphasis is on how human groups were organized to deal with their environment and how those organizations changed over time.

Cultural environmental archaeology developed out of the natural area approach of Wissler (1938) and Krober (1939) and the archaeological work of Clark (1952) and Griffin (1960). This synthesis tended to explain cultural differences in terms of subsistence and climatic changes. Since World War II, archaeologists trained in ethnology have developed a prehistoric facet of cultural ecological studies. This school integrated archaeological considerations with the analysis of Steward (1955), Sahlins and Service (1960), and Service (1962) and developed propositions testable with archaeological data. A third school of research is settlement archaeology, as presented by Chang (1967). Settlement analysis focuses on activity areas,

settlement types, and the environmental location of sites. Current research attempts to synthesize these three approaches through the use of systems theory, as presented by Binford (1964), Flannery (1968), and Rappaport (1968). The underlying assumption of this theoretical orientation is that human population is dependent upon culture as a means of adaptation and that culture's goal is survival in an environment composed of natural forces, biotic populations, and human societies. Therefore, the basic unit of study is culture; and investigations are geared to the recovery of data pertinent to the interaction of culture with environmental variables (Ford 1974:385-386).

As a conceptual tool for identifying specific research problems and designing archaeological investigations to answer these problems, culture is subdivided into six categories: technology, subsistence, settlement system, social organization, ideology, and human biology. The relationship of these subtopics to variation in the natural environment in ecology and geochronology constitutes the operational basis of the research design. It is important to remember that these subtopics are analytic categories and are not intended to be viewed as independent parameters of culture. Each subtopic, in the functioning of the cultural system, is interrelated with all others.

Research Questions

The ability to answer specific research questions is limited by the level, or intensity, of the archaeological investigation and the nature of the data base recovered. The subtopics which are most suitable to preliminary evaluation using initial Phase I/II survey and testing data from the White Walnut Creek study area are technology and settlement/subsistence systems.

Site Density. Of current interest to the archaeological community in Illinois and elsewhere is the topic of predictive models of expected site frequencies for circumscribed geographic areas. The rationale for site distribution models arises from a concern over expected impact through construction or other land-altering industrial developments upon areas where the nature and distribution of cultural resources have not been tabulated. In this regard, predictive models are seen as an aid in the management process (cf. Brown 1981:xiii) for prefield planning of research strategies in anticipation of archaeological survey activity.

Such predictive modeling also incorporates other known information concerning prehistoric cultural and environmental adaptations as part of a more well-developed research design. In this sense, the adequacy of predictive statements, as judged by field survey and verification of resources present, becomes an assessment of the archaeologist's understanding of past human settlement practices. While Roper reminds us that the current status of the adequacy of predictive modeling "is still not very good" (1981:151), it provides a basis for further refinements in both archaeological method and theory, particularly in the topical area of human settlement/subsistence systems. However, these goals may only be achieved through further problem-oriented research (cf. Price 1981:145) involving the formulation of specific research questions and thorough assessment of these questions through field observation and subsequent analysis.

Based upon previous archaeological work in the Big Muddy River drainage,

particularly the pilot predictive study by Williams and Woods (1978), the following research question was formulated.

Question 1. Expected site densities within the White Walnut Creek research area will vary from 5 to 8 sites/mi^2 (2 to 3 sites/km^2).

This question will be evaluated based on the number of archaeological elements discovered as a result of field investigations.

Site Function. Questions pertaining to site function are always the basis for the interpretation of archaeological sites. The synthesis of these interpretations with other data from a research area provides the framework for further archaeological investigation in the area and for the formulation of specific problem-oriented research at later stages of investigation on the same sites. Such resulting questions may include intrasite and intersite considerations or may be used in regional comparisons.

One method of interpreting site function is based on the assessment of activities represented at the site. Such activities are inferred from the presence and quantity of artifact and feature types recovered and specific sets of behaviors associated with such types. Since different environments are known to produce different sets of resources usable by human groups (cf. Zawacki and Hausfater 1969), exploitation of environmental zones is expected to result in differential distributions of site types among environmental zones. Because the White Walnut area contains three different environments (bottomland forest, slope woodland, and post-oak flats), an unequal distribution of site types is expected. Therefore, the following research question is proposed for examination.

Question 2. Site function, i.e., activities, will vary between environmental zones and can be measured by the diversity of tool assemblages and subsistence data.

Small Intrasite Activity Centers. Upland areas such as post-oak flats and prairie environments offer a more limited corpus of resources available for exploitation. The overburden of glacial till and loess deposits in the upland environments of the White Walnut area precludes the potential for significant prehistoric mineral exploitation (e.g., chert or clay procurement). Edible plant resource diversity and quantity are relatively low for such environments (cf. Zawacki and Hausfater 1969) and do not appear to have been conducive to the establishment of long-term procurement/habitation stations. While the area offers the most potential for game exploitation, hunting and related activities necessitate the maintenance of highly mobile task groups, resulting in extremely short-term occupations for any given locale. Because of the highly transitory nature of occupations at such sites, cultural deposition processes resulting in feature formation are minimal. Thus, subsurface features (e.g., storage pits, post molds, hearths, trash pits) are not expected on small sites in areas not conducive to long-term habitation. Based on these considerations, the following proposition is formulated.

Question 3. Small intrasite activity areas in upland settings will not contain subsurface features.

Cypress Projectile Point Study. As an outgrowth of archaeological investigations in White Walnut Creek and surrounding areas, interest has been drawn to a consideration of the Cypress projectile point typology. The result is a reexamination of existing classifactory schemes and a general discussion of the tool's morphological and functional attributes. Rather than being phrased as a specific question or hypothesis, this research question is pursued as a general study in typological classification in the larger context of the Late Archaic-Early Woodland transition.

Question 4. Reexamination of present Cypress projectile points/knives typology.

These research questions will be examined in discussions of survey and testing results.

Field Methods

A survey of archaeological and historical resources in the Deep Strip #3 area began May 21, 1979, and lasted through mid-July. Concurrently, a survey of Burning Star #4, Northfield, Consolidation Coal Company, also was conducted (Haas and McNerney 1980). For a period of time in the spring, the field party moved from Burning Star Mine #4 and Burning Star #2, Deep Strip #3, to take advantage of spring plowing.

The survey at the Deep Strip #3 area comprised approximately 2,625 acres (1,050 ha) in and around the mine permit boundaries. Of these, 1,530 acres (612 ha) were cultivated at the time of survey. The remaining 1,095 acres (438 ha) were surveyed in September 1979 by Joseph M. Nixon. Simultaneously, testing of sites lying within the proposed creek diversion channel was conducted.

In order to meet project objectives, the following field methods were employed.

1. Surveys were carried out in the cultivated portions of the research area as spring plowing and planting progressed, in order to allow for maximum visibility.
2. Woodland areas were surveyed in early fall, using shovel testing techniques.
3. Following the locational phase of the work, site testing and evaluation began.
4. Next, the site locations were stratified by environmental zones.

5. Sites within the proposed channel realignment areas and in areas which would be impacted early in the mining schedule were tested first.

6. The remainder of sites discovered were tested according to their environmental location, cultural affiliation, and other research considerations.

7. A 0.5% sample excavation was proposed for each site. Excavation of 1 x 1 m squares systematically distributed across the site was planned. These squares were excavated to the base of the plow zone in order to locate undisturbed cultural deposits as a means of determining the sites' significance and potential for answering specific research questions. Deeper excavations were conducted as necessary.

Cultivated areas were walked in 15 m intervals, and all cultural material was noted. When a site was encountered, a thorough examination of the area was made, and approximate site size was determined where possible. Culturally diagnostic material was collected, and the relative density and types of material present were recorded. Fifty-four sites were investigated in this manner.

Uncultivated land was surveyed by using a shovel testing technique. Transects and shovel probes were placed at 30 m intervals, and the soil was sorted through with trowels in order to locate cultural materials. This interval was reduced to 20 m in high potential areas and reduced to 5 m when cultural material was encountered. Evaluations of shovel probing techniques (Lovis 1976; Moore and Burge 1981:145-147) indicate that such a procedure is a very reliable tool for discovering sites in areas of very poor to no surface visibility. Six sites within the permit boundaries were recorded using this technique. One site, 21D3-127H, was located through information given by a local resident.

Eleven sites were located within or partially within the right of way of the proposed creek diversion channel. These sites were tested first, beginning in early August 1979. Certain modifications in the proposed testing methodology had to be made early in the field season, as it became apparent that a 0.5% sample from each site was unrealistic in terms of both the scope of Phase I research and the time it would take to achieve such a sample. As an alternative, it was decided that 1 m^2 test units would be placed systematically at 20 m intervals. This would achieve the dual purpose of delineating site limits and recovering subsurface data. Test units were excavated in the manner previously outlined.

It would have been ideal if all 41 sites within the permit area could have been tested. This was not possible, however, due to restrictions of expense and time. After investigating all sites within the creek diversion channel and those that appeared to be in imminent danger of destruction, it was decided that a 50% sample of the 41 sites in the permit area could be achieved and would be a representative sample of all possible site types that could occur in the study area. The criteria used in the selection of these

sites were cultural affiliation, environmental zone associations (environmental zones at each site were ranked according to nearness to the site), and distance from White Walnut Creek. These criteria were used to insure a sample from each cultural period and environmental zone represented to identify relationships, if any, that exist between the two.

A rank ordering of the nearest environmental zones to a given site is an alternative to the site catchment analysis method (Roper 1979), the tabulation of the number and percentages of environmental areas within a distinct radius of the site. Although catchment analysis is a more refined quantitative assessment of the environmental potential near the site locality, the method was not deemed appropriate for this project. However, the approach used in this study provided an evaluation of environmental variability by which to stratify a target population of sites. An examination of the distances of sites from streams reflected a bimodal distribution. The median was selected as the measure to differentiate the two modal groups. Subsequently, the distances were clustered into two groups: 0-300 m and 400-2,000 m.

Utilizing these criteria, 26 potential site type categories were determined to exist. Several sites were classified under a number of the categories because of the multicomponent nature of many sites. Fifteen sites were selected for testing on the basis that they were in the creek channel diversion area. Twelve other sites were randomly selected from remaining categories; however, one site (21D3-115) was unavailable for testing because prior earthmoving activities had stockpiled top soil over the site. No other site from that category was available as an alternate.

Prehistoric Artifact Analysis Procedures

All artifacts collected from survey and test excavations were washed, sorted, and catalogued by provenience using the accession numbering system of the Center for Archaeological Investigations, Southern Illinois University at Carbondale. The prehistoric material was sorted into formal descriptive categories (Appendix A).

Measurements were taken on all tools. Lithic debris was divided into primary decortication, secondary decortication, interior flakes, and shatter, the latter quantified by size grades. Other material either was described formally or quantified and weighed, depending upon the nature of the artifact.

All of this material must be systematically examined and analyzed in an attempt to determine both the function of the site and a function of the material. The function of many prehistoric tools is unknown or is complicated by multiple uses. Therefore, some researchers (McNerney 1975:277) have chosen to use descriptive categories or classes rather than risk applying incorrect or questionable functional names to various types of artifacts. Many of the data presented in Appendix A are designed to accumulate a body of descriptive data and observations that can be used later in more specialized functional tool studies. As larger samples of individual tool categories are recovered and additional research is carried out in the till plains area, an attempt should be made to determine functional tool categories. Chert source studies also must be conducted to determine the range of chert resource utilization.

The following is a list of basic categories used for classification:

Unmodified chert
Cores
Bifacial tools
Unifacial tools
Unifacial blades and flakes
Chert debitage
Chert chunks
Ceramics
Clay fragments
Pitted stone
Grooved stone
Battered/crushed stone
Planar faced stone
Unmodified rock
Unmodified bone
Unmodified shell
Floral remains

In addition to the general analysis of artifactual materials, a specialized morphological/functional analysis of Cypress tools (Denny 1972; Winters 1967) was carried out on a sample of 109 artifacts drawn from the White Walnut area and other sites in the till plains (Appendix C).

Historic Artifact Analysis Procedures

Classification and analysis procedures for the historic components located in the White Walnut Creek project area paralleled those used for prehistoric materials. Twelve classes were used to describe and quantify this material. All classes were considered in terms of descriptive attributes, several of which were found to be chronologically sensitive. Diagnostic characteristics were later identified by reliable sources.

The breakdown of historic material into these 12 classes was based on the composition material of the artifacts themselves. The classes used were:

Ceramics, diagnostic fragments
Ceramics, fragmented sherds
Ceramics, miscellaneous
Buttons
Curved glass
Fragmented glass
Flat glass
Bottles, intact and fragmented
Nails
Metal, identifiable and unidentifiable
Brick, cinder, coal, unmodified stone
Miscellaneous historics

Temporally diagnostic fragments were defined as any sherd that either had a diagnostic design element, maker's mark, or could be measured for body and

for rim thickness. Intact rims where no design elements were present also were included in this category.

Fragmented sherds may or may not have design elements. In all cases, they were too fragmentary to allow accurate thickness measurements. They were quantified by count and bulk weights.

Miscellaneous ceramics is an all-inclusive category used to quantify ceramic artifacts which could not be described adequately in the same manner as the diagnostic or fragment material.

Buttons were described in terms of potentially diagnostic elements. This sample was not extensive enough for cross comparison among sites.

Both flat and curved glass were analyzed in terms of weight, count, color, maximum body thickness, presence or absence of patina, and surface treatment. Where analyzed samples contained more than one specimen, the average maximum thickness and standard deviations were calculated.

Fragmented glass was defined as glass that is too broken to take relevant thickness measurements, as well as badly eroded or burned glass. The glass was described in terms of color (where determinable), presence of patina, and bulk counts and weights.

"Milk glass" is a definition used in this report to designate white glass of the kind often used in canning liners. This glass was also referred to in the literature as "opal glass" (McKay 1979:46) or porcelain.

Intact and fragmented bottles were described via various attributes. Measurements used during analysis were described through the use of indices (Figure 5). In addition to indices, the analysis also considered construction methods, closure types, color, and portion. Surface treatment, paper labels, embossing, and bottle marks were noted also.

Nails were analyzed in terms of condition and the shape of both the head and the shaft. Bulk counts and weights were recorded in order to attain an idea of the mass which was excavated from each provenience.

Miscellaneous unidentifiable and identifiable metal objects, although treated in a single class, were sorted according to identifiable features; where possible, a function was assigned.

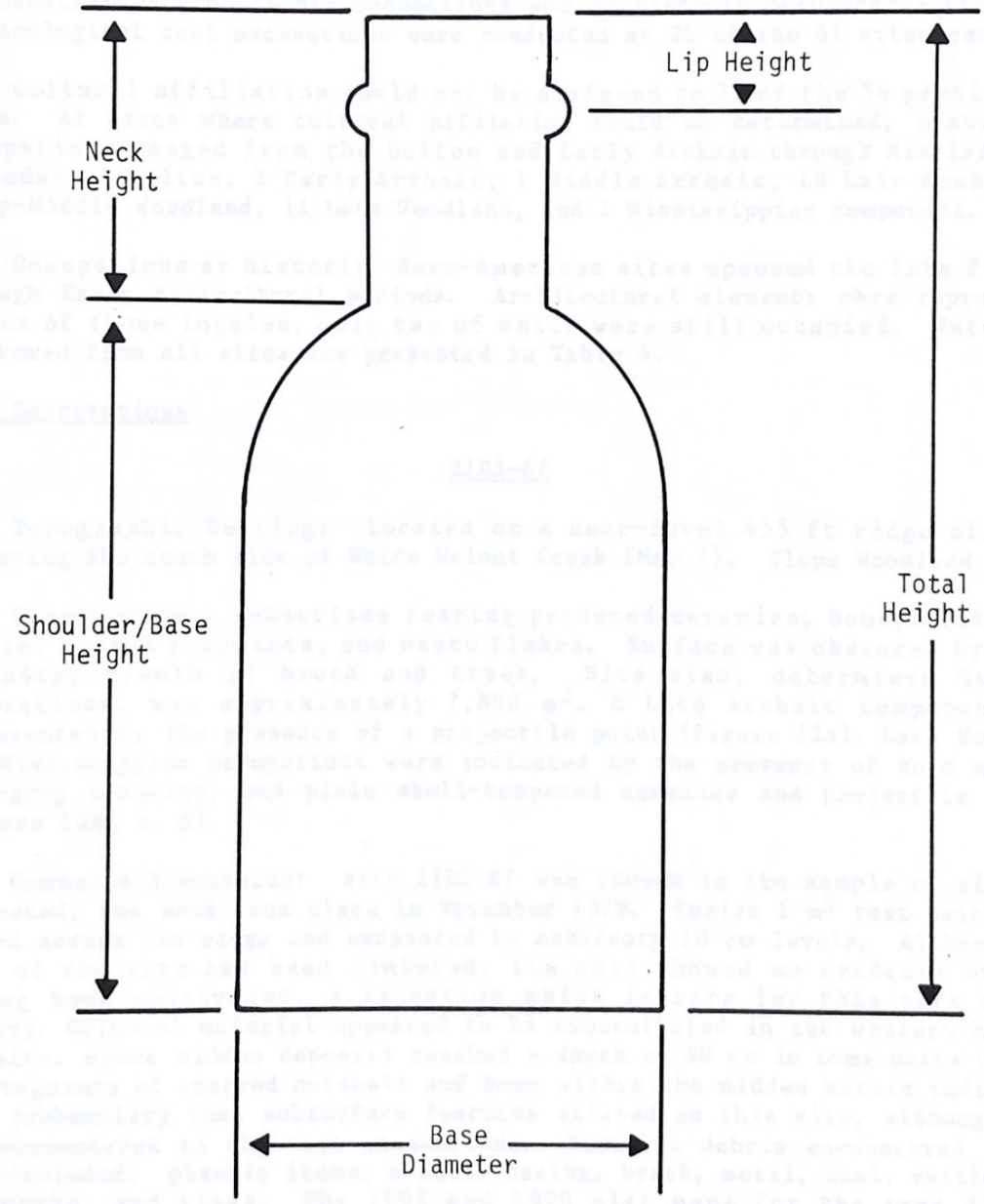
Brick, cinder, coal, and unmodified stone (in an historical context were tabulated in a single category. Only weights and counts were distinguished as relevant characteristics. No surface modification of brick, such as lettering or glazing, was evident in the White Walnut collections.

During the process of analyzing the materials from White Walnut, it became evident that an all-inclusive class for unusual historic artifacts was necessary. This class was used to describe materials that would not fit into any of the above classifications. These items were grouped into a single class because of their individualistic nature, and to treat them separately would be cumbersome. Miscellaneous historics included items constructed of

plastic, wood, modified stone, rubber, etc. Artifacts in this class were analyzed in terms of construction material, function, and diagnostic characteristics. A detailed description of these classes and their attributes is given in Appendix B.

Figure 5

Bottle Measurements



RESULTS OF SURVEY AND TESTING

Archaeological investigations in the 2,625 acre (1,050 ha) White Walnut Creek study area located and recorded 61 archaeological sites (Map 6), representing 56 prehistoric occupations and 18 historic occupations (Table 4). Archaeological test excavations were conducted at 26 of the 61 sites recorded.

Cultural affiliation could not be assigned to 27 of the 56 prehistoric sites. At sites where cultural affilation could be determined, prehistoric occupations ranged from the Dalton and Early Archaic through Mississippian periods: 1 Dalton, 2 Early Archaic, 1 Middle Archaic, 10 Late Archaic, 7 Early-Middle Woodland, 11 Late Woodland, and 1 Mississippian component.

Occupations at historic Euro-American sites spanned the late Pioneer through Early Agricultural periods. Architectural elements were represented at six of these locales, only two of which were still occupied. Materials recovered from all sites are presented in Table 4.

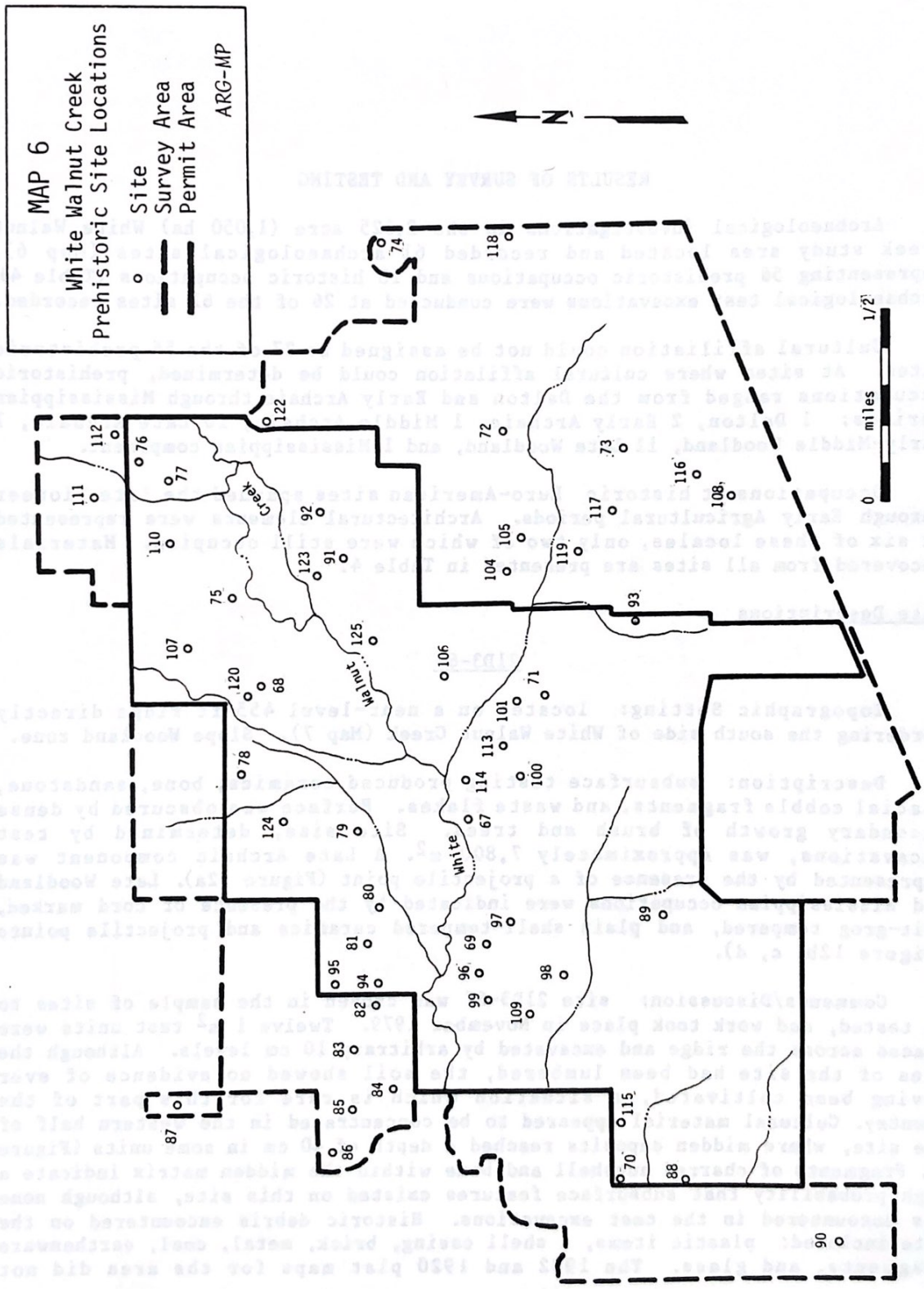
Site Descriptions

21D3-67

Topographic Setting: located on a near-level 455 ft ridge directly bordering the south side of White Walnut Creek (Map 7). Slope Woodland zone.

Description: subsurface testing produced ceramics, bone, sandstone, glacial cobble fragments, and waste flakes. Surface was obscured by dense secondary growth of brush and trees. Site size, determined by test excavations, was approximately 7,800 m^2. A Late Archaic component was represented by the presence of a projectile point (Figure 12a). Late Woodland and Mississippian occupations were indicated by the presence of cord marked, grit-grog tempered, and plain shell-tempered ceramics and projectile points (Figure 12b, c, d).

Comments/Discussion: site 21D3-67 was chosen in the sample of sites to be tested, and work took place in November 1979. Twelve 1 m^2 test units were placed across the ridge and excavated by arbitrary 10 cm levels. Although the area of the site had been lumbered, the soil showed no evidence of ever having been cultivated, a situation which is rare for this part of the country. Cultural material appeared to be concentrated in the western half of the site, where midden deposits reached a depth of 40 cm in some units (Figure 6). Fragments of charred nutshell and bone within the midden matrix indicate a high probability that subsurface features existed on this site, although none was encountered in the test excavations. Historic debris encountered on the site included: plastic items, a shell casing, brick, metal, coal, earthenware fragments, and glass. The 1902 and 1920 plat maps for the area did not


MAP 6
White Walnut Creek
Prehistoric Site Locations
Site
Survey Area
Permit Area
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miles
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Walnut Creek
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Table 4

Summary of Sites
Burning Star #2, Deep Strip #3
White Walnut Creek, Perry County, Illinois

Abbreviations Used

Soil Association:

A -- Ava Silt Loam
B -- Bluford Silt Loam
C -- Bluford-Ava
D -- Ava Silty Clay Loam
E -- Bonnie Silt Loam
F -- Hickory, Ava, Bluford
G -- Ava, Bluford, Blair, Balknap
H -- Bluford-Wynoose

Environmental Zone: The first numeral designates the environmental zone in which the site is located. The second and third numerals represent the next nearest environmental zone.

I -- Bottomland
II -- Slope Woodland
III -- Post Oak Flats
IV -- Prairie

Cultural Affiliation:

EA -- Early Archaic
MA -- Middle Archaic
LA -- Late Archaic
A -- Archaic
EW -- Early Woodland
MW -- Middle Woodland
LW -- Late Woodland
W -- Woodland
M -- Mississippian
P -- Prehistoric
H -- Historic

Table 4

Summary of Sites
Burning Star #2, Deep Strip #3
White Walnut Creek, Perry County, Illinois

SIU-C No. 21D3-	Approx. Site Size M2	Elevation (Feet)	Distance From Nearest Perennial Stream (Meters)	Soil Association	Environmental Zone	Cultural Affiliation
67	7,800	455	25	A	II, I-III	LW, M, H
68	9,000	435-455	300	A	II, I, III	LA/EW, MW, LW, H
69	4,800	448	200	B	III, II, I	MA, MW, LW
70	5,500	438	800	A	II, I	LA/EW, W
71	2,100	460	700	C	III-II, I	LA
72	2,400	470	1,000	A	II, I	P
73	3,200	475	1,500	F	II, III, I	P
74	4,000	485	1,100	F	II, III, I	P
75	3,500	440	200	C	II, I	LA, MW
76	4,000	467	300	A	I, I	A, LW
77	2,700	450	300	A	II, I	LA, W
78	10,000	435-450	500	A	II, I	W, H

Table 4 (cont'd)

SIU-C No. 21D3-	Approx. Site Size M^2	Elevation (Feet)	Distance From Nearest Perennial Stream (Meters)	Soil Association	Environmental Zone	Cultural Affiliation
79	7,500	432	400	A	II, I	LW
80	1,800	430	300	A	II, I	LA, MW
81	8,750	435-450	300	A	II, I	LA, MW, H
82	1,000	427	300	A	II, I	A, MW
83	9,000	430-445	400	G	II, I	P
84	2,400	430	200	G	II, I	P
85	1,800	440	400	G	II, I, III	P
86	1,500	445	500	G	II, I, III	P
87	Undet	455	1,100	G	II, I, III	P
88	1,200	438	1,000	A	II, I	P
89	Undet	450	800	A	II, I, III	P
90	400	445	1,900	A	II, III, I	P
91	3,000	460	200	A	II, III, I	W
92	4,850	460	200	A	II, III, I	EA, W, H

Table 4 (cont'd)

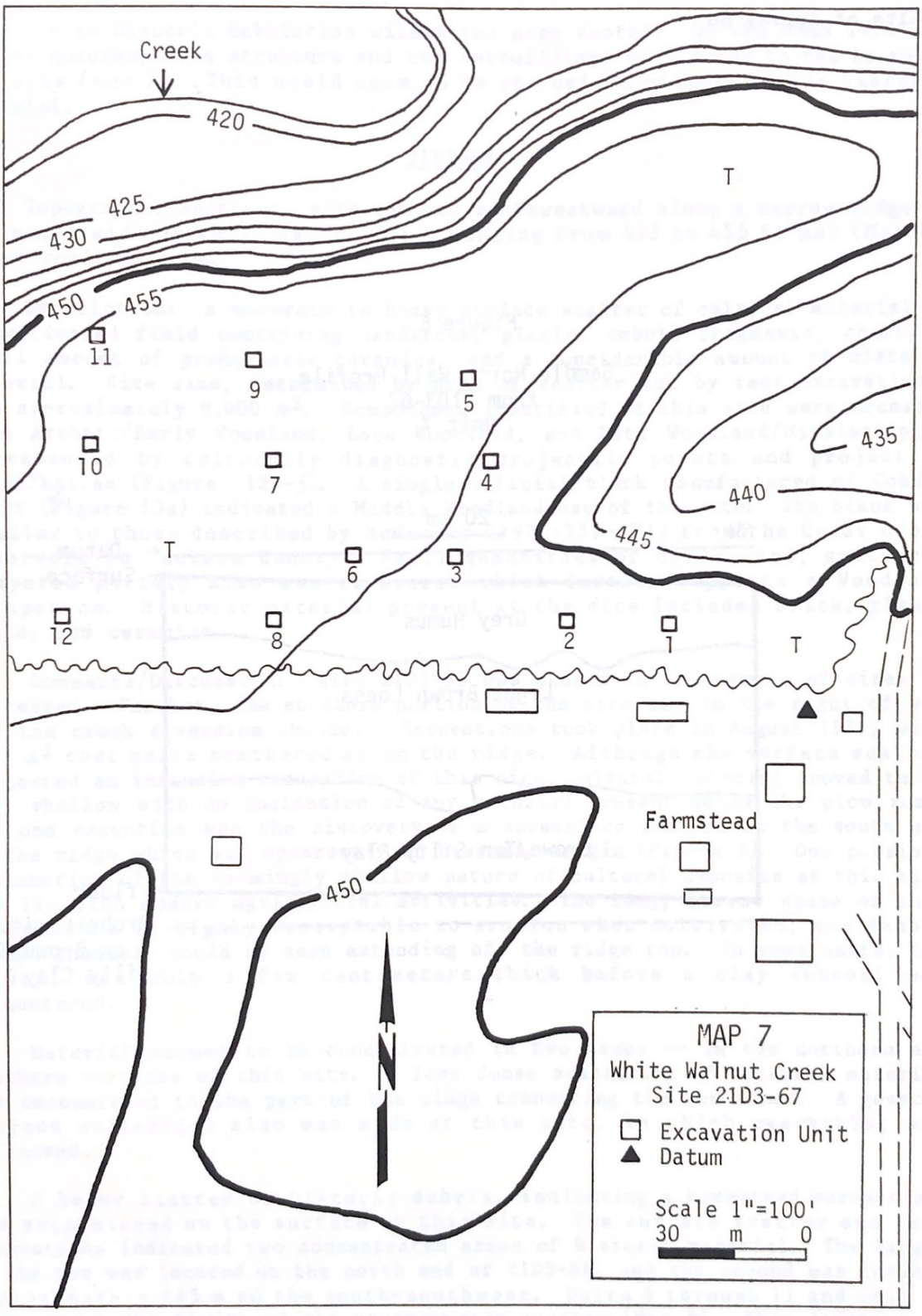
SIU-C No. 21D3-	Approx. Site Size M^2	Elevation (Feet)	Distance From Nearest Perennial Stream (Meters)	Soil Association	Environmental Zone	Cultural Affiliation
93	2,100	460	1,000	C	II, I	W, H
94	3,000	435	200	A	II, I	LA, MW, LW
95	1,200	450	300	A	II, I	P
96	3,000	445	100	A	II, III, I	MW
97	1,100	445	300	B	III, II, I	P
98	4,200	445	500	A	II, I	P, H
99	2,000	445	200	A	II, I, III	W, H
100	625	455	400	B	III, II, I	P
101	3,200	460	500	B	III, II, I	P, H
102	1,800	435-445	300	D	II, I	P
103H	2,860	465	500	B	III,II, I	H
104	400	465	800	A	II, I	LW
105	Isolated Find	460	900	B	II-III, I	P
106	3,000	460	300	A	II, I	MW, M

Table 4 (cont'd)

SIU-C No. 21D3-	Approx. Site Size M2	Elevation (Feet)	Distance From Nearest Perennial Stream (Meters)	Soil Association	Environmental Zone	Cultural Affiliation
107H	24,000	460	600	C	II-III, I	LA, W, H
108	1,000	470	1,600	F	II, III, I	P
109	1,050	445	400	A	II, I	P
110	6,400	460	500	A	II, I	A, LW
111	2,800	470	1,000	G	II, I	P
112	1,600	467	300	D	II, I	W
113	3,600	460	300	A	II-III, I	LA, H
114	1,200	450	100	A	II, III, I	MW
115	Isolated Find	439	700	A	II, III, I	EA
116	Undet	475	1,400	F	II-III, I	P, H
117	2,100	470	1,300	H	III, II, I	P
118	1,800	495	1,300	H	III, II	P
119	Undet	470	1,200	F	II, I, III	P
120	3,000	450-455	500	A	II, I, III	MW, LW, H

Table 4 (cont'd)

SIU-C No. 21D3-	Approx. Site Size M2	Elevation (Feet)	Distance From Nearest Perennial Stream (Meters)	Soil Association	Environmental Zone	Cultural Affiliation
121	Undet	440	800	B	III, II, I	H
122	4,800	475	300	A	II, I	EA, LW
123	900	420	100	E	I, II	H
124	2,500	455	700	C	II-III	P, H
125	Undet	457	100	A	II, I, III	P
126H	Undet	460	200	A	II, I, III	H
127H	Undet	470	1,600	A	II, III	H


Creek
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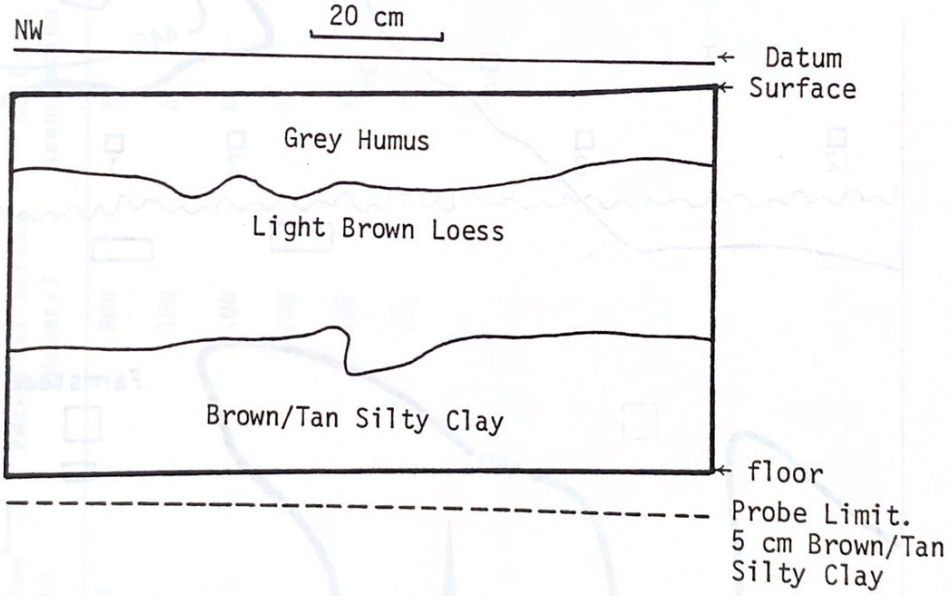
1
Farmstead
MAP 7
White Walnut Creek
Site 21D3-67
Excavation Unit
Datum
Scale 1"=100'
30 m 0

Figure 6

Sample North Wall Profile
from 21D3-67
Unit 7



indicate an historic habitation within the area tested. On the USGS 1974 7.5′ Pyatts quadrangle, a structure and two outbuildings were noted to the south of the site (Map 7). This would seem to be the origin of most of the historic material.

21D3-68

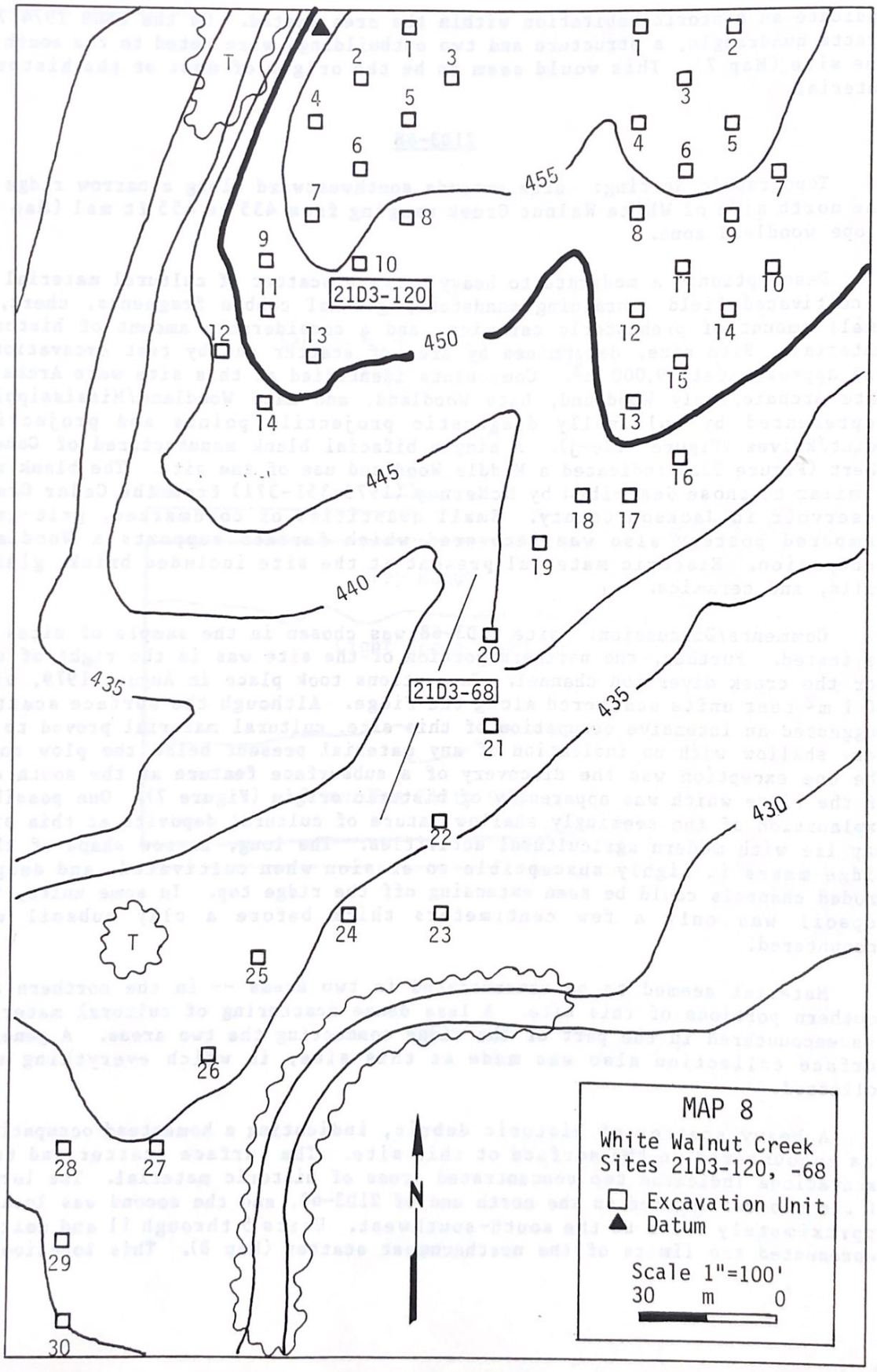
Topographic Setting: site extends southwestward along a narrow ridge on the north side of White Walnut Creek ranging from 435 to 455 ft msl (Map 8). Slope woodland zone.

Description: a moderate to heavy surface scatter of cultural material in a cultivated field containing sandstone, glacial cobble fragments, chert, a small amount of prehistoric ceramics, and a considerable amount of historic material. Site size, determined by area of scatter and by test excavations, was approximately 9,000 m^2. Components identified at this site were Archaic, Late Archaic/Early Woodland, Late Woodland, and Late Woodland/Mississippian represented by culturally diagnostic projectile points and projectile point/knives (Figure 12e-j). A single bifacial blank manufactured of Cobden chert (Figure 13a) indicated a Middle Woodland use of the site. The blank was similar to those described by McNerney (1975:351-371) from the Cedar Creek Reservoir in Jackson County. Small quantities of cordmarked, grit-grog tempered pottery also was recovered which further supports a Woodland occupation. Historic material present at the site included brick, glass, nails, and ceramics.

Comments/Discussion: site 21D3-68 was chosen in the sample of sites to be tested. Further, the northern portion of the site was in the right of way for the creek diversion channel. Excavations took place in August 1979, with 30 1 m^2 test units scattered along the ridge. Although the surface scatter suggested an intensive occupation of this site, cultural material proved to be very shallow with no indication of any material present below the plow zone. The one exception was the discovery of a subsurface feature at the south end of the ridge which was apparently of historic origin (Figure 7). One possible explanation of the seemingly shallow nature of cultural deposits at this site may lie with modern agricultural activities. The long, narrow shape of this ridge makes it highly susceptible to erosion when cultivated, and deeply eroded channels could be seen extending off the ridge top. In some units, the topsoil was only a few centimeters thick before a clay subsoil was encountered.

Material seemed to be concentrated in two areas -- in the northern and southern portions of this site. A less dense scattering of cultural material was encountered in the part of the ridge connecting the two areas. A general surface collection also was made at this site, in which everything was collected.

A heavy scatter of historic debris, indicating a homestead occupation, was encountered on the surface ot this site. The surface scatter and test excavations indicated two concentrated areas of historic material. The larger of the two was located on the north end of 21D3-68, and the second was located approximately 145 m to the south-southwest. Units 5 through 11 and unit 14 represented the limits of the northernmost scatter (Map 8). This location on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21D3-120
21D3-68
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MAP 8
White Walnut Creek
Sites 21D3-120, -68
Excavation Unit
Datum
Scale 1"=100'
30 m 0

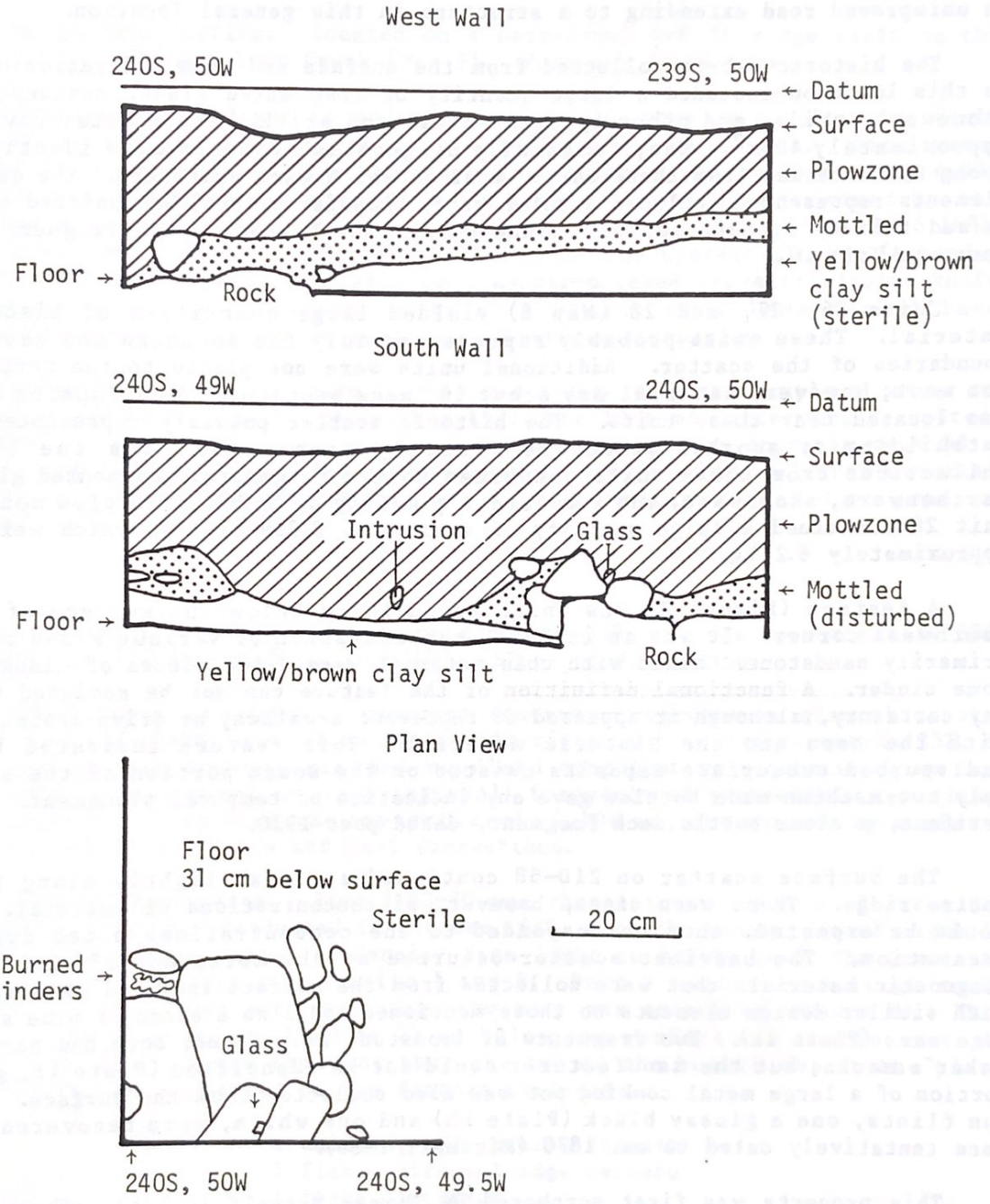


Figure 7

Site 21D3-68

Feature 1

the ridge also corresponded to the approximate location of a structure on the an unimproved road extending to a structure in this general location.

The historic debris collected from the surface and from excavation units in this location included a large quantity of fragmented glass, earthenware, stoneware, nails, and other types of metal and brick. The scatter covered approximately 40 m^2. Many temporally diagnostic elements were identified among the material from these units, most of which were whiteware. The design elements represented included annular ware, transfer prints, handpainted ware, raised relief, spongeware, and commonware. One historic pipe fragment was found in Unit 10.

Units 26, 27, and 28 (Map 8) yielded large quantities of historic material. These units probably represented only the southern and eastern boundaries of the scatter. Additional units were not placed to the north or the west; however, material may occur in these sections. A collapsing barn was located near these units. The historic scatter possibly represented an outbuilding or another structure directly associated with the barn. Collections from these units contained bottle fragments, fragmented glass, earthenware, stoneware, and a moderate quantity of brick. The plow zone in unit 28 contained a large quantity of sandstone, 2,339 pieces, which weighed approximately 6.2 kg.

A feature (Figure 7) was encountered 18 cm below the surface of the southwest corner. It was an isolated concentration of various sized rock, primarily sandstone. Mixed with this material were a few pieces of glass and some cinder. A functional definition of the feature can not be assigned with any certainty, although it appeared to represent a walkway or drive associated with the barn and the historic material. This feature indicated that undisturbed subsurface deposits existed on the south portion of the site. Only two machine-made bottles gave any indication of temporal placement. One artifact, a clear bottle neck fragment, dated post-1920.

The surface scatter on 21D-68 continued at least lightly along this entire ridge. There were signs, however, of concentrations of material. As would be expected, they corresponded to the concentrations noted during excavation. The heaviest scatter occurred at the north end of the site. Diagnostic materials that were collected from the surface included whitewares with similar design elements to those mentioned and also a sherd of blue shell edge ware (Plate 1a). Two fragments of ironstone were found; both had partial maker's marks, but the manufacturer could not be identified (Plate 1f, g). A portion of a large metal cooking pot was also collected from the surface. Two gun flints, one a glossy black (Plate 1h) and one white, were recovered and were tentatively dated to ca. 1870 (Mitchell 1980).

This property was first purchased by Thomas Metcalf in 1853. There was no indication, however, regarding when a house structure was originally built on the property. The early plat maps for the area indicated the presence of a structure by 1902. The material scatter indicated an early date, ca. 1850, for the assemblage from the northern portion of the site. It is possible the barn was not constructed until later. Artifacts from this portion of the site were more recent and indicated that the occupation of the site continued into the 1900s.

21D3-69

Topographic Setting: located on a near-level 448 ft ridge bluff on the south side of White Walnut Creek (Map 9). Post oak flats zone.

Description: a light to moderate artifact scatter in a cultivated field containing sandstone, glacial cobble fragments, and chert. Site size, determined by area of scatter and test excavations, was approximately 4,800 m^2. Cultural components present were Middle Archaic, determined by the presence of a side-notched biface similar to Godar artifacts (Cook 1976:168); Early Woodland, indicated by a variety A tool of the Cypress cluster (Appendix C); and Middle Woodland, indicated by a corner-notched projectile/point knife (Figure 13b-d). In addition, a basal fragment of a Lowe flared base projectile point indicated an early Late Woodland occupation.

Comments/Discussion: site 21D3-69 was selected in the sample of sites to be tested. Work took place in October 1979, and 10 1 m^2 units were excavated. The heaviest densities of material were confined to an area approximately 50 m south of the edge of the ridge and approximately 60 m wide. Cultural material was restricted to the plow zone, and test excavations failed to produce subsurface features.

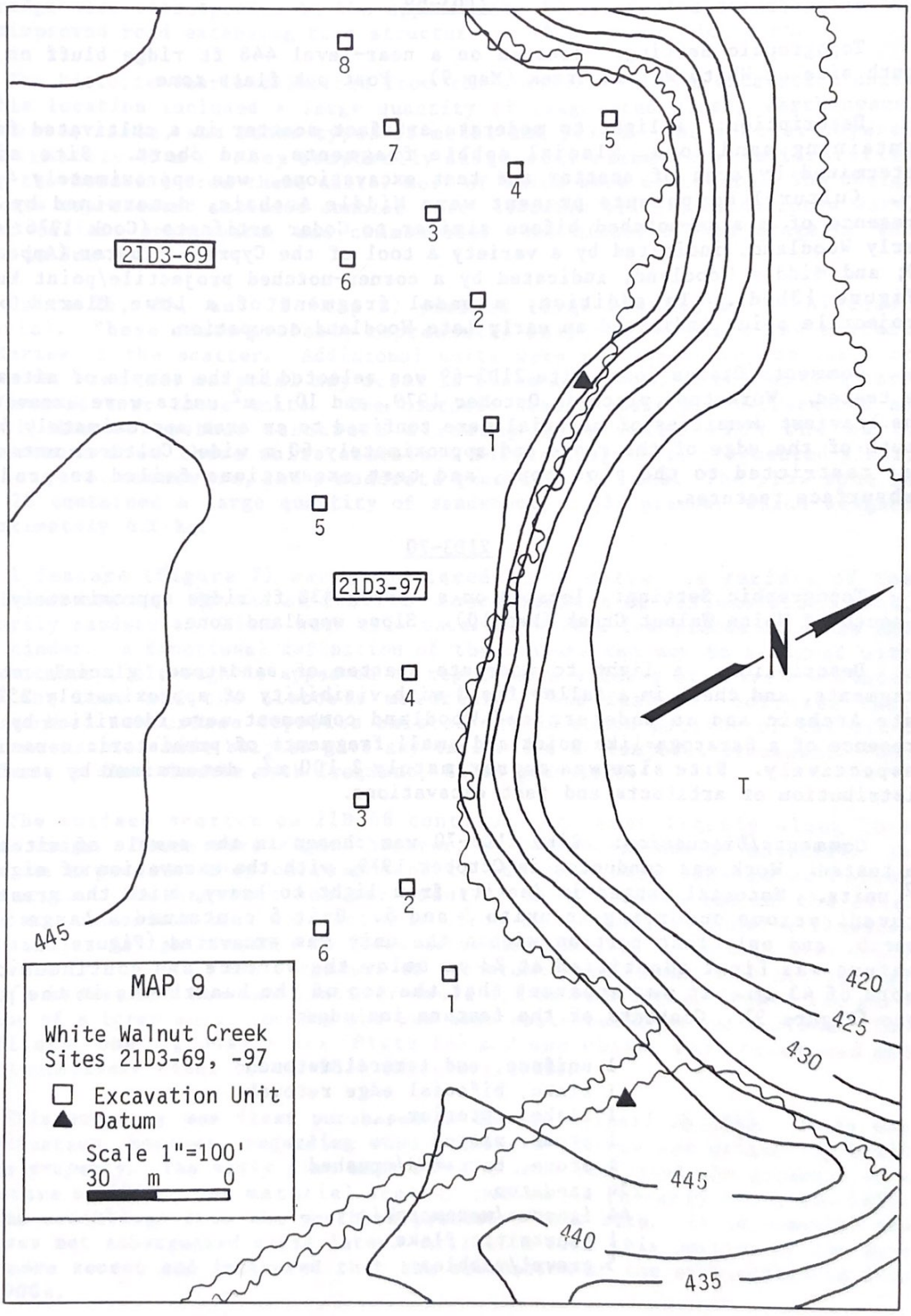
21D3-70

Topographic Setting: located on a narrow 438 ft ridge approximately 800 m south of White Walnut Creek (Map 10). Slope woodland zone.

Description: a light to moderate scatter of sandstone, glacial cobble fragments, and chert in a fallow field with visibility of approximately 25%. A Late Archaic and an undetermined Woodland component were identified by the presence of a Saratoga-like point and small fragments of prehistoric ceramics, respectively. Site size was approximately 2,100 m^2, determined by surface distribution of artifacts and test excavations.

Comments/Discussion: Site 21D3-70 was chosen in the sample of sites to be tested. Work was conducted in October 1979, with the excavation of eight 1 m^2 units. Material ranged in density from light to heavy, with the greatest concentrations occurring in units 5 and 8. Unit 5 contained a large rock hearth, and only that portion within the unit was excavated (Figure 8). The feature was first identified at 23 cm below the surface and continued to a depth of 43 cm. It was apparent that the top of the hearth was in the plow zone (Figure 9). Contents of the feature included:

1	uniface, end lateral retouch
1	flake, bifacial edge retouch
1	flake, interior
1	stone, pitted
1	stone, battered/crushed
224	sandstone
44	igneous/metamorphic
1	quartzitic flake
5	gravel/pebbles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MAP 9
White Walnut Creek
Sites 21D3-69, -97
Excavation Unit
Datum
Scale 1"=100'
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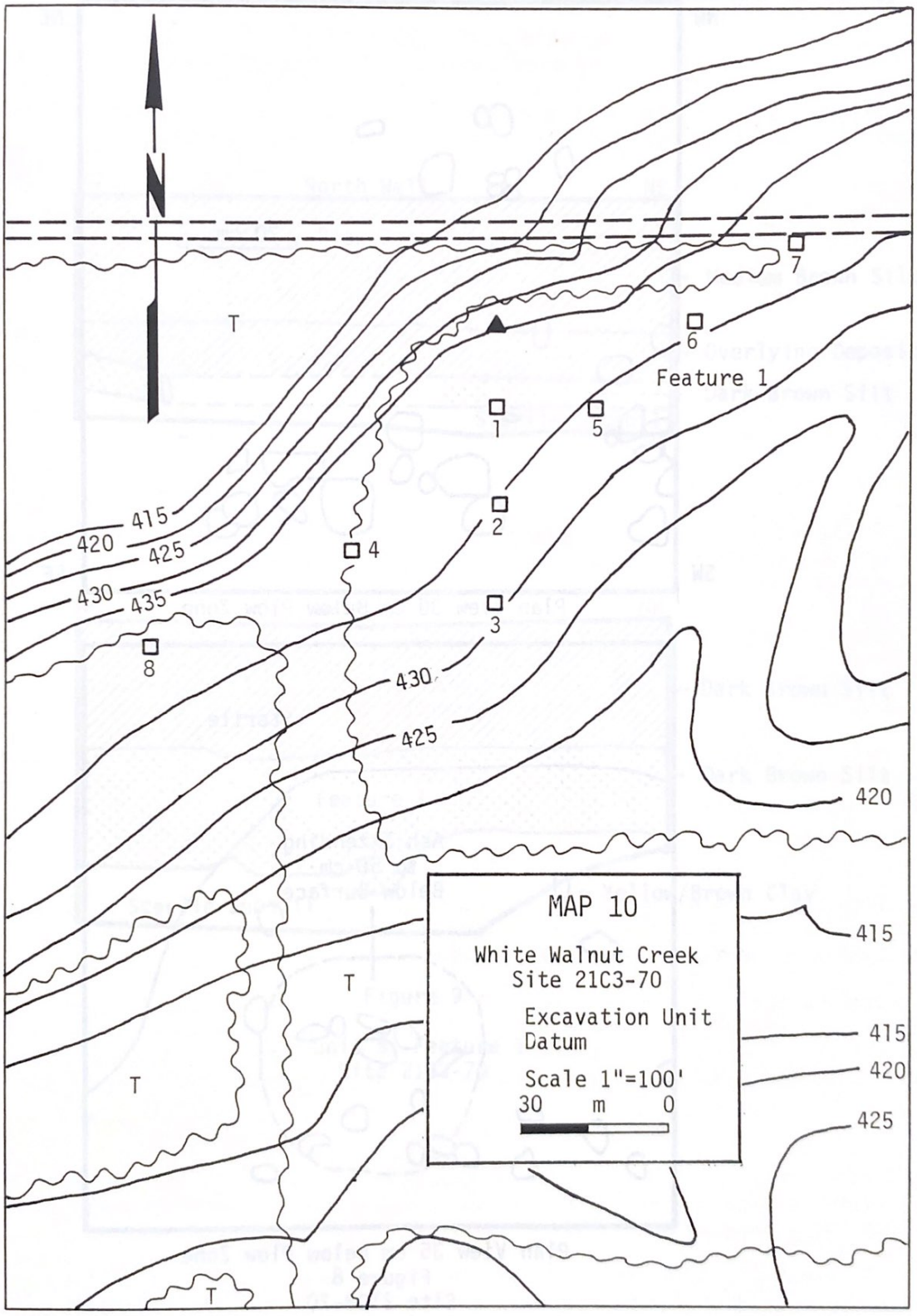
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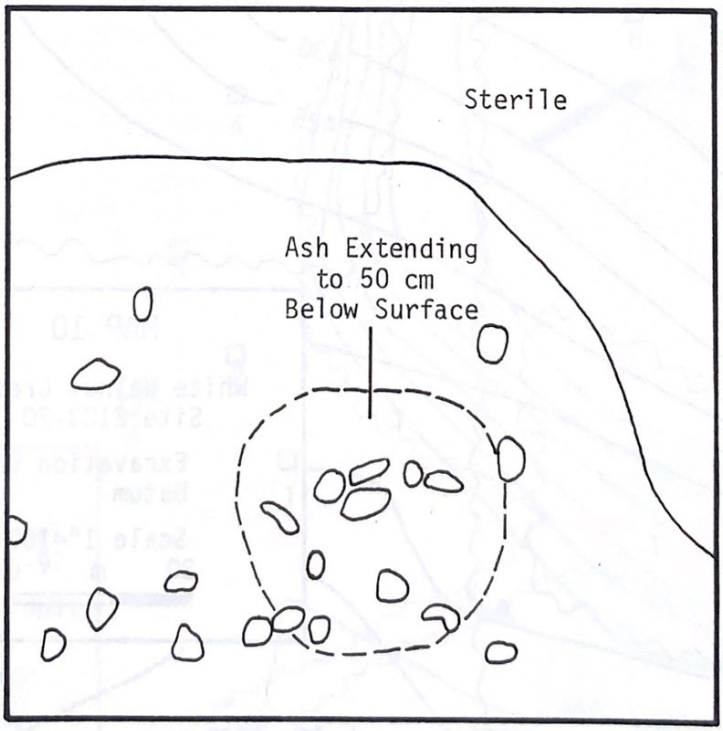
MAP 10
White Walnut Creek
Site 21C3-70
Excavation Unit
Datum
Scale 1"=100'
30 m 0

Plan View 30 cm Below Plow Zone



Plan View 35 cm Below Plow Zone
Figure 8
Site 21D3-70
Unit 5, Feature 1

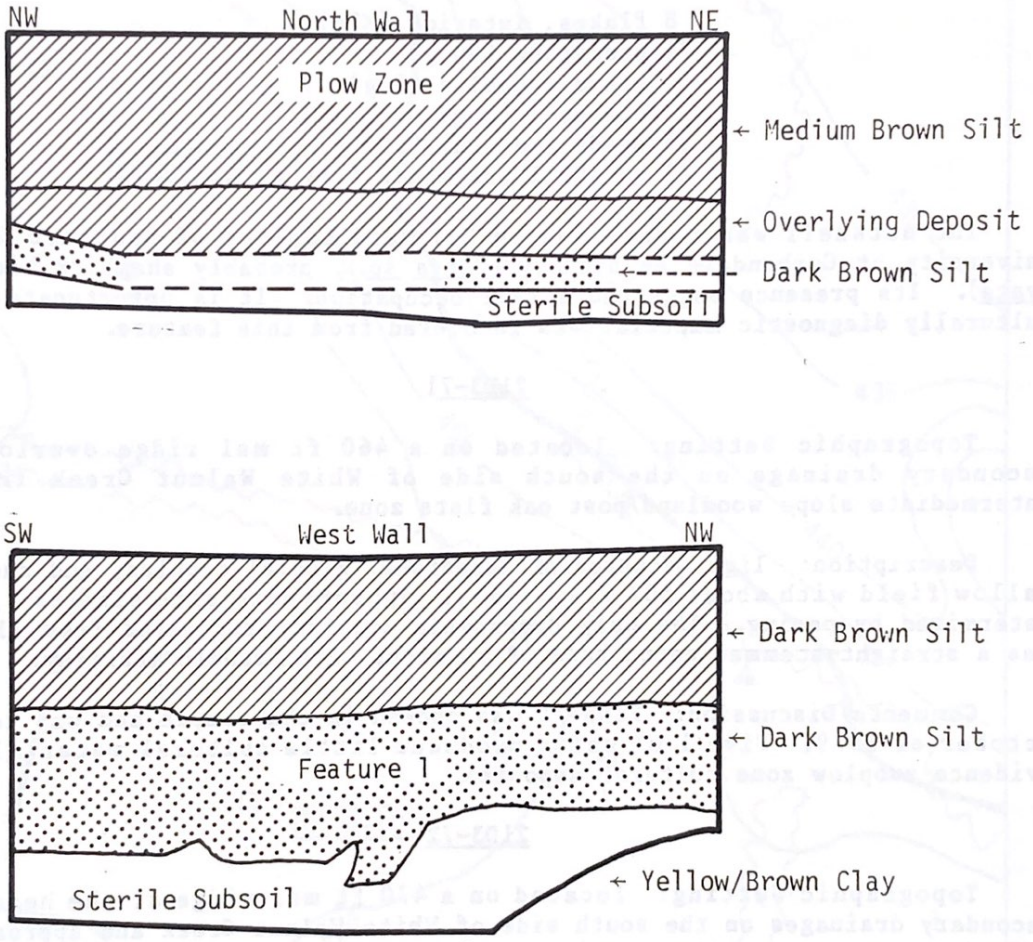


Figure 9

Unit 5, Feature 1
Site 21D3-70

10 hematite
2 botanical remains (nutshell fragments)

In addition, a 12.6 l soil sample from the feature was fine screened through 1/16 in mesh, and the following material was recovered:

8 flakes, interior (<1g)
74 sandstone (90 g)
gravel/pebbles (5 g)
charcoal (2 g)
26 seeds (modern) (.05 g)
23 nutshell fragments (.61 g)

The nutshell was identified by Mr. Neil Lopinot of Southern Illinois University at Carbondale as hickory (Carya sp.), probably shagbark hickory (C. ovata). Its presence suggested a fall occupation. It is unfortunate that no culturally diagnostic material was recovered from this feature.

21D3-71

Topographic Setting: located on a 460 ft msl ridge overlooking a secondary drainage on the south side of White Walnut Creek (Map 11). Intermediate slope woodland/post oak flats zone.

Description: light scatter of sandstone, glacial cobbles, and chert in a fallow field with about 50% visibility. Approximate site size is 2,100 m^2, determined by pacing. The only diagnostic artifact recovered from this site was a straight-stemmed point base of apparent Late Archaic affinity.

Comments/Discussion: 21D3-71 was chosen in the sample and was tested in October of 1979. Five 1 m^2 units produced little cultural material and no evidence subplow zone cultural deposits.

21D3-72

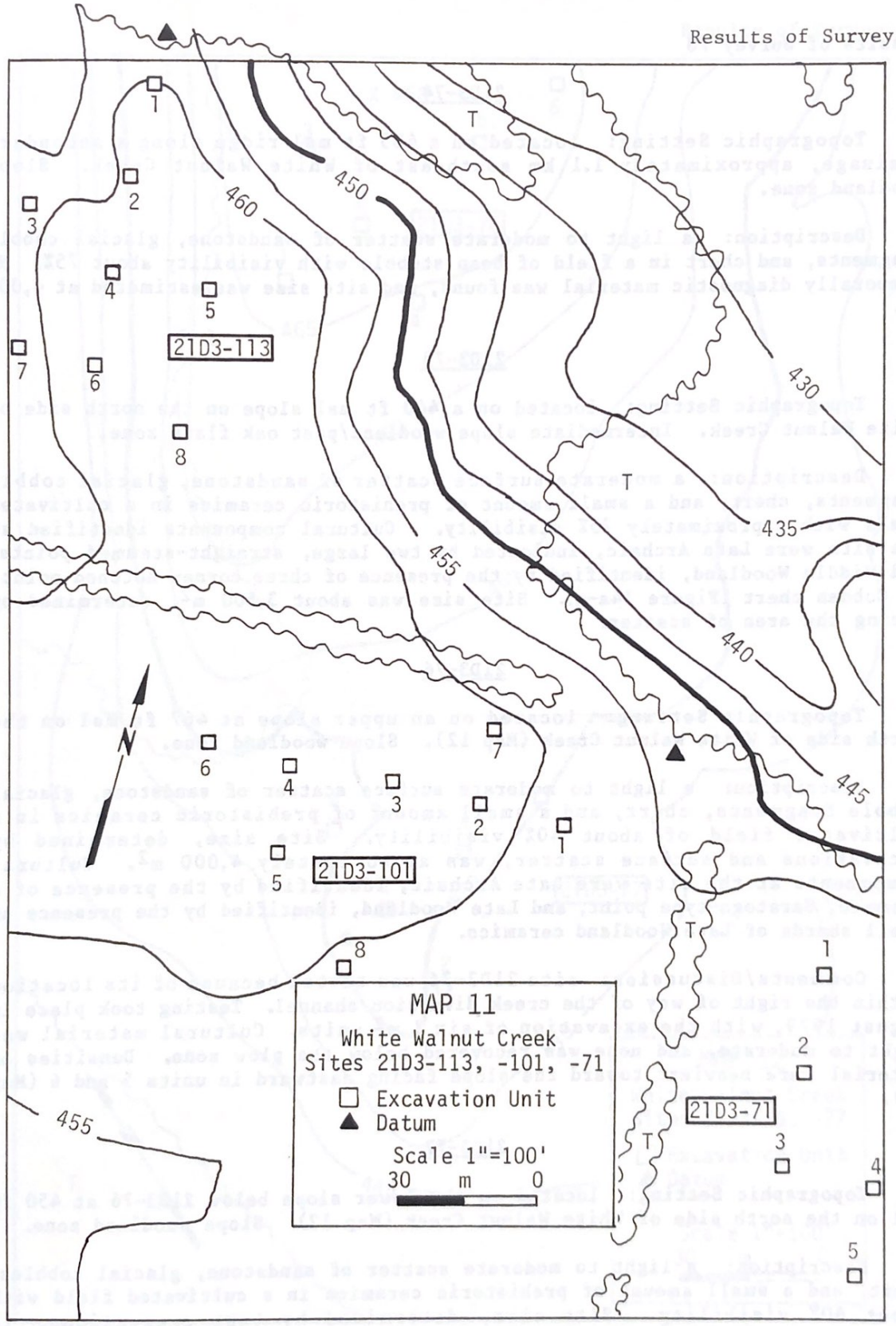
Topographic Setting: located on a 470 ft msl ridge at the head of two secondary drainages on the south side of White Walnut Creek and approximately 1 km from the creek. Slope woodland zone.

Description: light scatter of sandstone, glacial cobble fragments, and chert in a field of corn stubble with about 40% visibility. A large blade of Kinkaid chert with end-lateral retouch was the only artifact collected. Cultural affiliation is unknown, and site size was approximately 2,400 m^2.

21D3-73

Topographic Setting: located on a 457 ft msl slope at the head of a secondary drainage on the south side of White Walnut Creek, approximately 1.5 km from the creek. Slope woodland zone.

Description: a moderate scatter of sandstone, glacial cobble fragments, and chert in a cultivated field with about 75% visibility. No temporally diagnostic material was observed, and site size was estimated at 3,200 m^2.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21D3-113
21D3-101
21D3-71
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MAP 11
White Walnut Creek
Sites 21D3-113, -101, -71
Excavation Unit
Datum
Scale 1"=100'
30 m 0

21D3-74

Topographic Setting: located on a 485 ft msl ridge along a secondary drainage, approximately 1.1 km southeast of White Walnut Creek. Slope woodland zone.

Description: a light to moderate scatter of sandstone, glacial cobble fragments, and chert in a field of bean stubble with visibility about 75%. No temporally diagnostic material was found, and site size was estimated at 4,000 m^2.

21D3-75

Topographic Setting: located on a 440 ft msl slope on the north side of White Walnut Creek. Intermediate slope woodland/post oak flats zone.

Description: a moderate surface scatter of sandstone, glacial cobble fragments, chert, and a small amount of prehistoric ceramics in a cultivated field with approximately 75% visibility. Cultural components identified at the site were Late Archaic, indicated by two large, straight-stemmed points, and Middle Woodland, identified by the presence of three corner-notched points of Cobden chert (Figure 14a-g). Site size was about 3,500 m^2, determined by pacing the area of scatter.

21D3-76

Topographic Setting: located on an upper slope at 467 ft msl on the north side of White Walnut Creek (Map 12). Slope woodland zone.

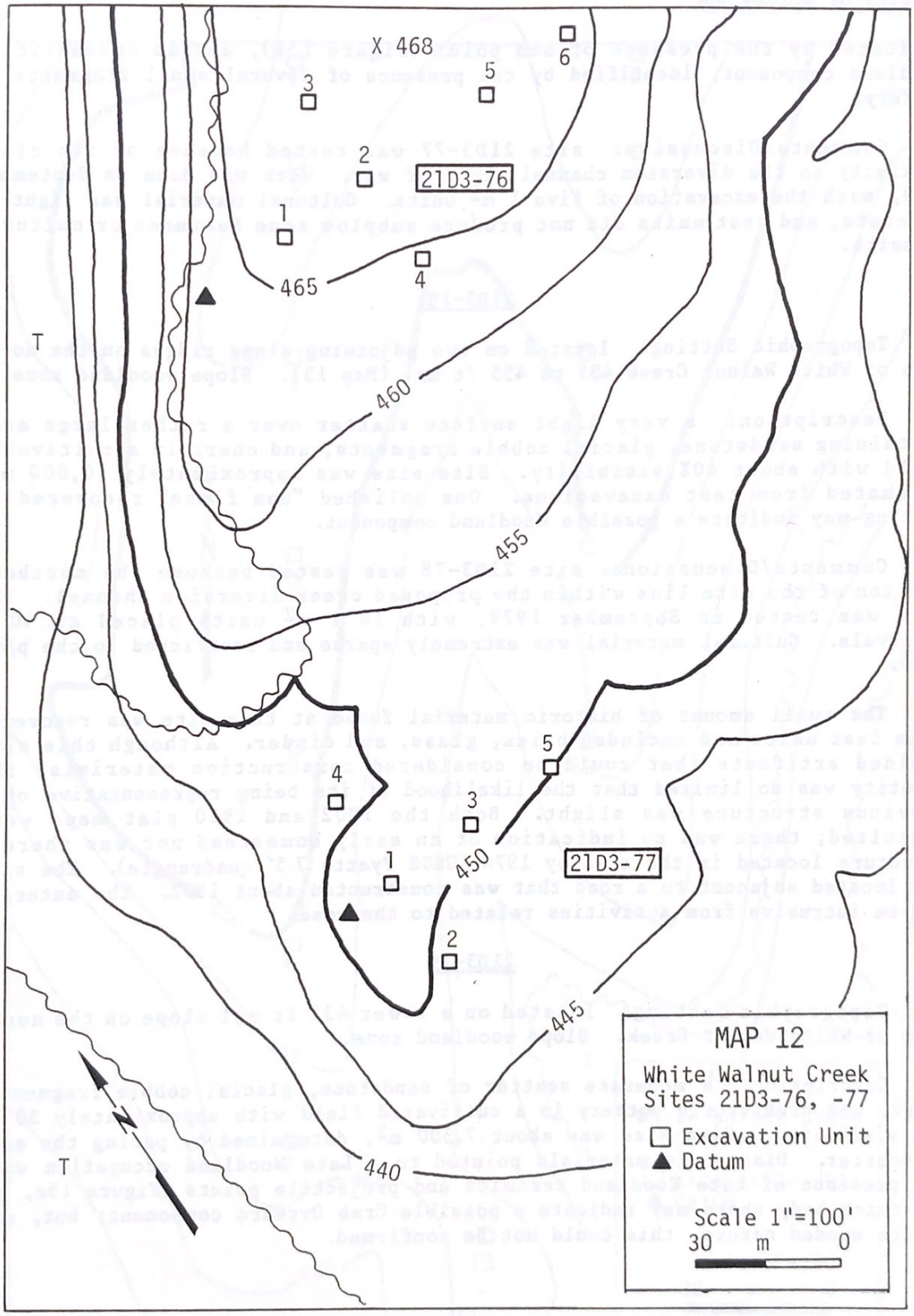
Description: a light to moderate surface scatter of sandstone, glacial cobble fragments, chert, and a small amount of prehistoric ceramics in a cultivated field of about 40% visibility. Site size, determined by excavations and surface scatter, was approximately 4,000 m^2. Cultural components at the site were Late Archaic, identified by the presence of a stemmed, Saratoga-type point, and Late Woodland, identified by the presence of small sherds of Late Woodland ceramics.

Comments/Discussion: site 21D3-76 was tested because of its location within the right of way of the creek diversion channel. Testing took place in August 1979, with the excavation of six 1 m^2 units. Cultural material was light to moderate, and none was recovered below the plow zone. Densities of material were heaviest toward the slope facing eastward in units 5 and 6 (Map 12).

21D3-77

Topographic Setting: located on the lower slope below 21D3-76 at 450 ft msl on the north side of White Walnut Creek (Map 12). Slope woodland zone.

Description: a light to moderate scatter of sandstone, glacial cobbles, chert, and a small amount of prehistoric ceramics in a cultivated field with about 40% visibility. Site size, determined by test excavations, is approximately 2,700 m^2. Cultural components at the site were Late Archaic,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MAP 12
White Walnut Creek
Sites 21D3-76, -77
Excavation Unit
Datum
Scale 1"=100'
30 m 0

indicated by the presence of one point (Figure 15b), and an unidentified Woodland component, identified by the presence of several small fragments of pottery.

Comments/Discussion: site 21D3-77 was tested because of its close proximity to the diversion channel right of way. Work was done in September 1979, with the excavation of five 1 m^2 units. Cultural material was light to moderate, and test units did not produce subplow zone features or cultural deposits.

21D3-78

Topographic Setting: located on two adjoining slope ridges on the north side of White Walnut Creek 435 to 455 ft msl (Map 13). Slope woodland zone.

Description: a very light surface scatter over a rather large area containing sandstone, glacial cobble fragments, and chert in a cultivated field with about 40% visibility. Site size was approximately 10,000 m^2, estimated from test excavations. One polished "hoe flake" recovered in testing may indicate a possible Woodland component.

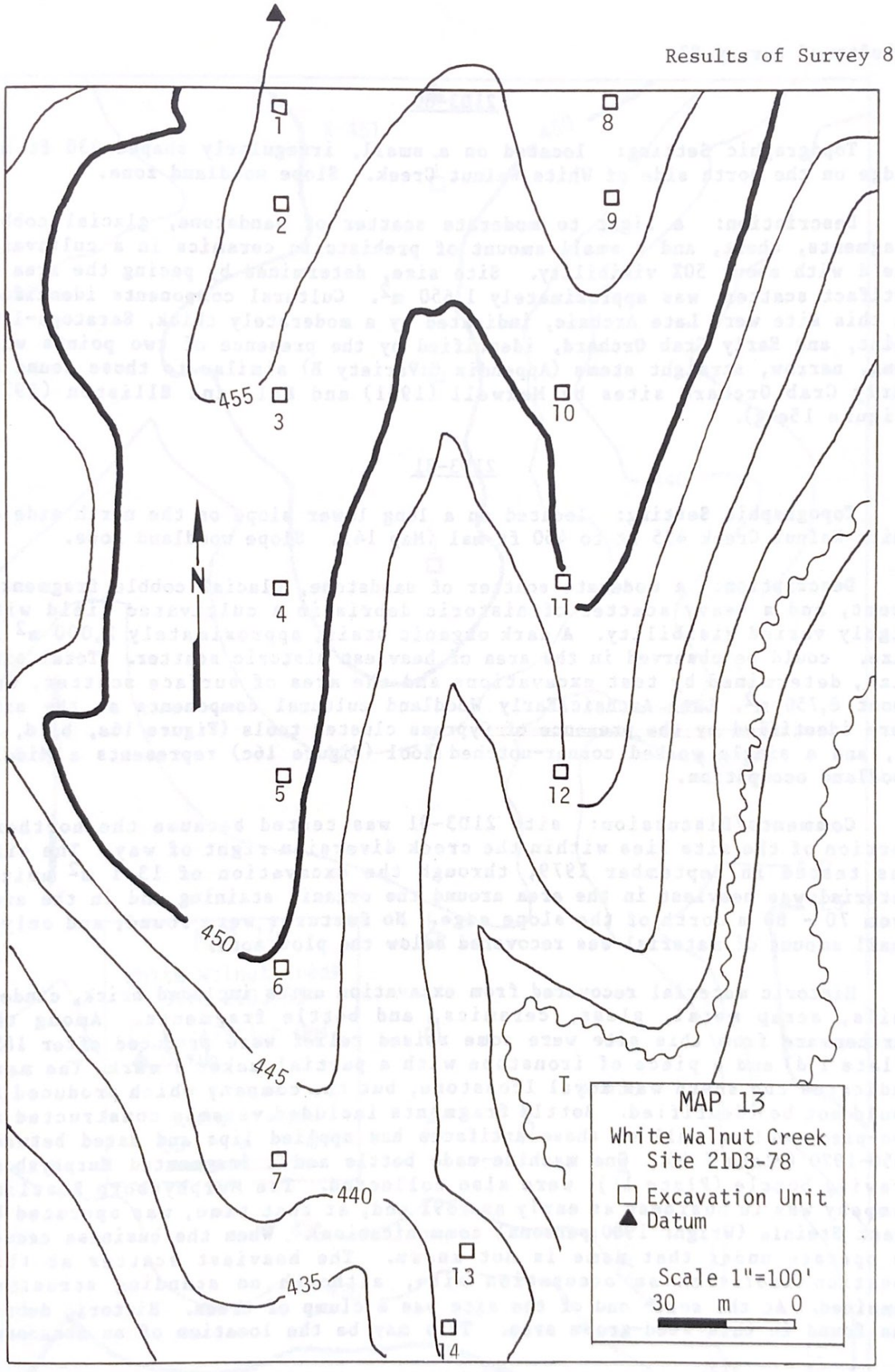
Comments/Discussion: site 21D3-78 was tested because the northern portion of the site lies within the proposed creek diversion channel. The site was tested in September 1979, with 14 1 m^2 units placed at 40 m intervals. Cultural material was extremely sparse and restricted to the plow zone.

The small amount of historic material found at this site was recovered from test units and included brick, glass, and cinder. Although this site yielded artifacts that could be considered construction materials, the quantity was so limited that the likelihood of its being representative of a previous structure was slight. Both the 1902 and 1920 plat maps were consulted; there was no indication of an early homestead nor was there a structure located in the area by 1974 (USGS Pyatts 7.5′ quadrangle). The site was located adjacent to a road that was constructed about 1902. The material may be intrusive from activities related to the road.

21D3-79

Topographic Setting: located on a lower 432 ft msl slope on the north side of White Walnut Creek. Slope woodland zone.

Description: a moderate scatter of sandstone, glacial cobble fragments, chert, and prehistoric pottery in a cultivated field with approximately 30 to 40% visibility. Site size was about 7,500 m^2, determined by pacing the area of scatter. Diagnostic materials pointed to a Late Woodland occupation with the presence of Late Woodland ceramics and projectile points (Figure 15c, d). One thick body sherd may indicate a possible Crab Orchard component; but, due to its eroded nature, this could not be confirmed.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11
12
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455
450
445
440
435
N
T
MAP 13
White Walnut Creek
Site 21D3-78
Excavation Unit
Datum
Scale 1"=100'
30 m 0

21D3-80

Topographic Setting: located on a small, irregularly shaped 430 ft msl ridge on the north side of White Walnut Creek. Slope woodland zone.

Description: a light to moderate scatter of sandstone, glacial cobble fragments, chert, and a small amount of prehistoric ceramics in a cultivated field with about 50% visibility. Site size, determined by pacing the area of artifact scatter, was approximately 1,650 m^2. Cultural components identified at this site were Late Archaic, indicated by a moderately thick, Saratoga-like point, and Early Crab Orchard, identified by the presence of two points with long, narrow, straight stems (Appendix C:Variety B) similar to those found at Early Crab Orchard sites by Maxwell (1951) and Hall and Elliston (1972) (Figure 15e-g).

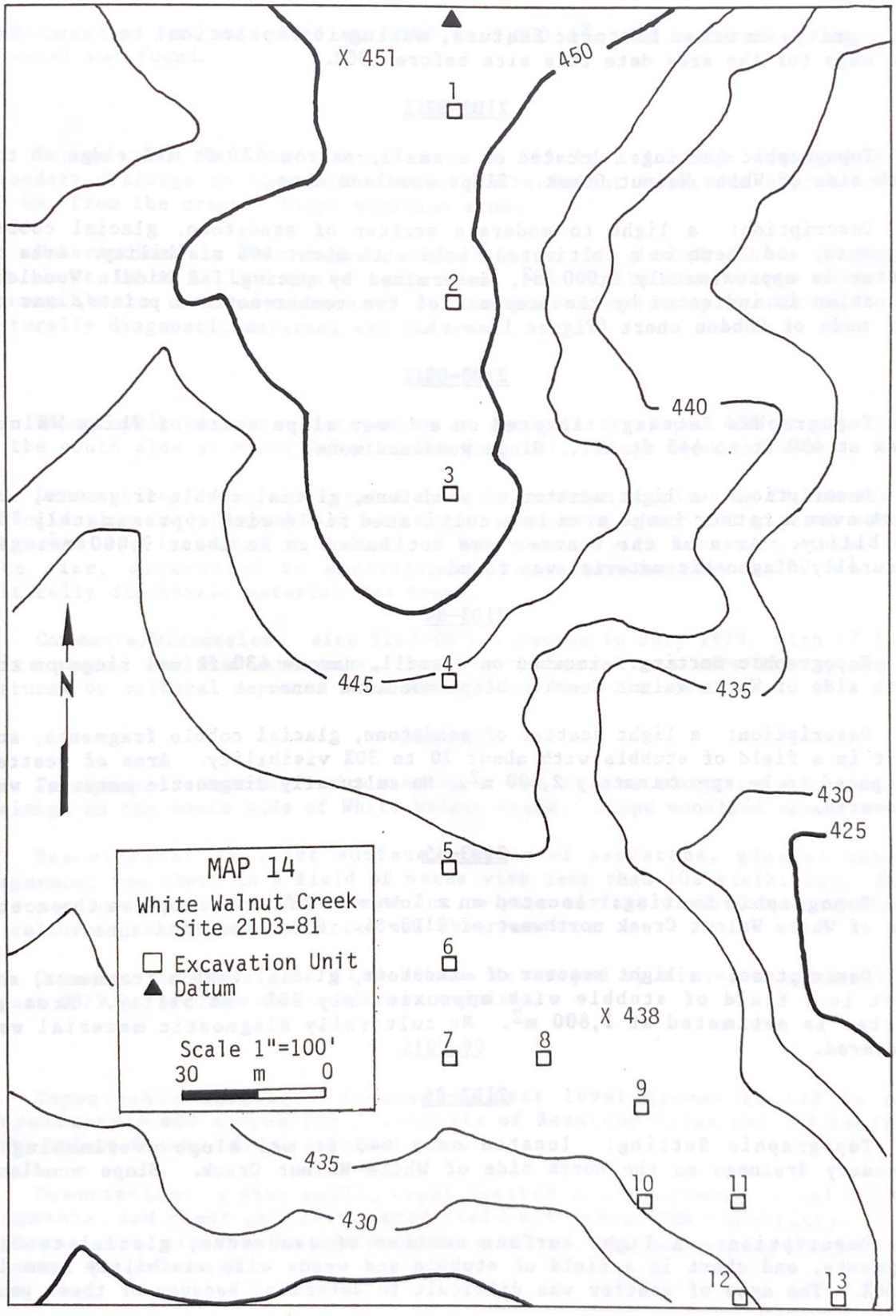
21D3-81

Topographic Setting: located on a long lower slope on the north side of White Walnut Creek 435 ft to 450 ft msl (Map 14). Slope woodland zone.

Description: a moderate scatter of sandstone, glacial cobble fragments, chert, and a heavy scatter of historic debris in a cultivated field with highly varied visibility. A dark organic stain, approximately 2,000 m^2 in size, could be observed in the area of heaviest historic scatter. Total site size, determined by test excavations and the area of surface scatter, was about 8,750 m^2. Late Archaic/Early Woodland cultural components at the site were identified by the presence of Cypress cluster tools (Figure 16a, b, d, e, f), and a single worked corner-notched tool (Figure 16c) represents a Middle Woodland occupation.

Comments/Discussion: site 21D3-81 was tested because the northern portion of the site lies within the creek diversion right of way. The site was tested in September 1979, through the excavation of 13 1 m^2 units. Material was heaviest in the area around the organic staining and in the area from 70 - 80 m north of the slope edge. No features were found, and only a small amount of material was recovered below the plow zone.

Historic material recovered from excavation units included brick, cinder, nails, scrap metal, glass, ceramics, and bottle fragments. Among the earthenware from this site were some raised relief ware produced after 1850 (Plate 1 d) and a piece of ironstone with a partial maker's mark. The mark indicates the sherd was Royal Ironstone, but the company which produced it could not be identified. Bottle fragments included vessels constructed in two-piece molds. All of these artifacts had applied lips and dated between 1850-1920 (Plate 1 k). One machine-made bottle and a fragmented Murphysboro brewing bottle (Plate 1 j) were also collected. The Murphysboro Bottling Company was in business as early as 1891 and, at that time, was operated by Frank Steinle (Wright 1980:personal communication). When the business ceased to operate under that name is not known. The heaviest scatter at this location indicated an occupation site, although no standing structure remained. At the south end of the site was a clump of trees. Historic debris was found in this weed-grown area. This may be the location of an abandoned


X 451
450
1
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440
3
N
4
445
435
430
425
MAP 14
White Walnut Creek
Site 21D3-81
Excavation Unit
Datum
5
6
X 438
7
8
9
Scale 1"=100'
30 m 0
435
10
11
430
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13

well, privy, or other historic feature, making it impractical to farm. The plat maps for the area date this site before 1902.

21D3-82

Topographic Setting: located on a small, narrow 427 ft msl ridge on the north side of White Walnut Creek. Slope woodland zone.

Description: a light to moderate scatter of sandstone, glacial cobble fragments, and chert in a cultivated field with about 40% visibility. Area of scatter is approximately 1,000 m^2, determined by pacing. A Middle Woodland occupation is indicated by the presence of two corner-notched points, one of them made of Cobden chert (Figure 17 a-c).

21D3-83

Topographic Setting: located on a lower slope north of White Walnut Creek at 430 ft to 445 ft msl. Slope woodland zone.

Description: a light scatter of sandstone, glacial cobble fragments, and chert over a rather large area in a cultivated field with approximately 70% visibility. Area of the scatter was estimated to be about 9,000 m^2. No culturally diagnostic material was found.

21D3-84

Topographic Setting: located on a small, narrow 430 ft msl ridge on the north side of White Walnut Creek. Slope woodland zone.

Description: a light scatter of sandstone, glacial cobble fragments, and chert in a field of stubble with about 20 to 30% visibility. Area of scatter was paced to be approximately 2,400 m^2. No culturally diagnostic material was recovered.

21D3-85

Topographic Setting: located on a lower 440 ft msl slope on the north side of White Walnut Creek northwest of 21D3-84. Slope woodland zone.

Description: a light scatter of sandstone, glacial cobble fragments, and chert in a field of stubble with approximately 20% visibility. Area of scatter is estimated at 1,800 m^2. No culturally diagnostic material was recovered.

21D3-86

Topographic Setting: located on a 445 ft msl slope overlooking a secondary drainage on the north side of White Walnut Creek. Slope woodland zone.

Description: a light surface scatter of sandstone, glacial cobble fragments, and chert in a field of stubble and weeds with visibility from 10 to 20%. The area of scatter was difficult to determine because of these poor

conditions but was estimated at 1,500 to 2,000 m^2. No culturally diagnostic material was found.

21D3-87

Topographic Setting: located on a 455 ft msl ridge overlooking a secondary drainage on the north side of White Walnut Creek and approximately 1.1 km from the creek. Slope woodland zone.

Description: a very light surface scatter of glacial cobble fragments and chert in a fallow field with about 10% visibility. Site size was impossible to determine because of the poor visibility conditions. No culturally diagnostic material was observed.

21D3-88

Topographic Setting: located on an irregularly shaped 438 ft msl ridge on the south side of White Walnut Creek (Map 15). Slope woodland zone.

Description: site was located from information supplied by Ed Johnson of Consolidation Coal Company. A very light scatter of chert and glacial cobble fragments was indicated in a field of heavy weeds with near zero visibility. Site size, determined by excavations, was approximately 1,200 m^2. No culturally diagnostic material was found.

Comments/Discussion: site 21D3-88 was tested in July 1979, with 17 1 m^2 units placed at 10 m intervals. Cultural material was very light, and no features or cultural deposits were found below the plow zone.

21D3-89

Topographic Setting: located on a 450 ft msl slope on a secondary drainage on the south side of White Walnut Creek. Slope woodland zone.

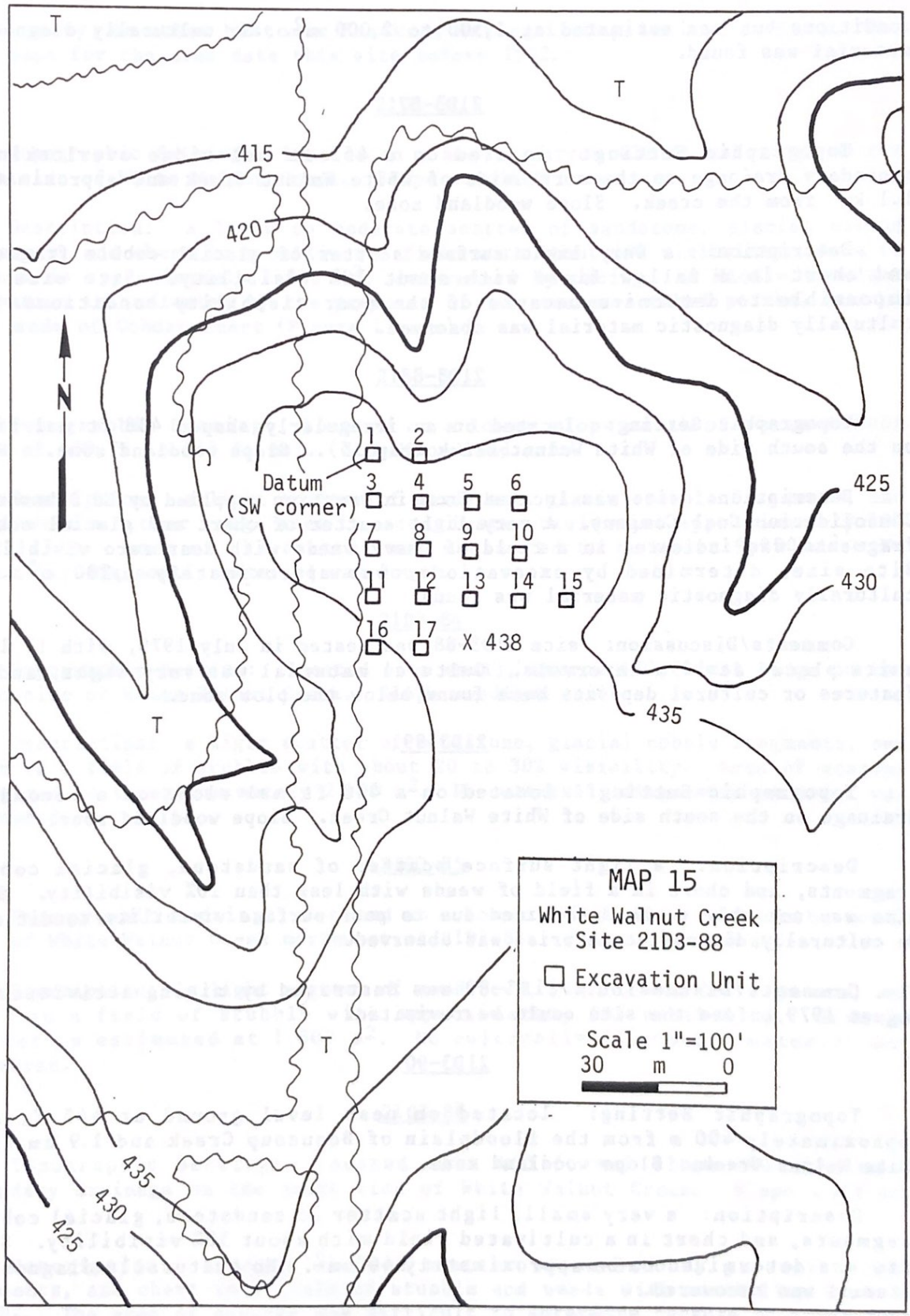
Description: a light surface scatter of sandstone, glacial cobble fragments, and chert in a field of weeds with less than 10% visibility. Site size was not able to be determined due to poor surface visibility conditions. No culturally diagnostic material was observed.

Comments/Discussion: 21D3-89 was destroyed by mining activities in August 1979 before the site could be revisited.

21D3-90

Topographic Setting: located on near level ground at 445 ft msl approximately 400 m from the floodplain of Beaucoup Creek and 1.9 km from White Walnut Creek. Slope woodland zone.

Description: a very small, light scatter of sandstone, glacial cobble fragments, and chert in a cultivated field with about 50% visibility. Site size was determined to be approximately 400 m^2. No culturally diagnostic material was recovered.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T
415
420
N
1
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Datum
(SW corner)
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425
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11
12
13
14
15
430
16
17
X 438
435
T
T
MAP 15
White Walnut Creek
Site 21D3-88
Excavation Unit
Scale 1"=100'
30 m 0
435
430
425

21D3-91

Topographic Setting: located on a narrow 460 ft msl ridge at the junction of White Walnut Creek and a secondary drainage (Map 16). Slope woodland zone.

Description: a light to moderate surface scatter of sandstone, glacial cobble fragments, and chert in a cultivated field with 100% visibility. Site size, determined by excavations, was approximately 3,000 m^2. Two small fragments of prehistoric ceramics recovered in test excavations indicated at least a Woodland occupation of this site.

Comments/Discussion: site 21D3-91 was chosen in the sample of sites to be tested, and work took place in October 1979. Six 1 m^2 units were excavated, and cultural material was light to moderate in density. No subsurface features were encountered, and very little cultural material was found below the plow zone.

21D3-92

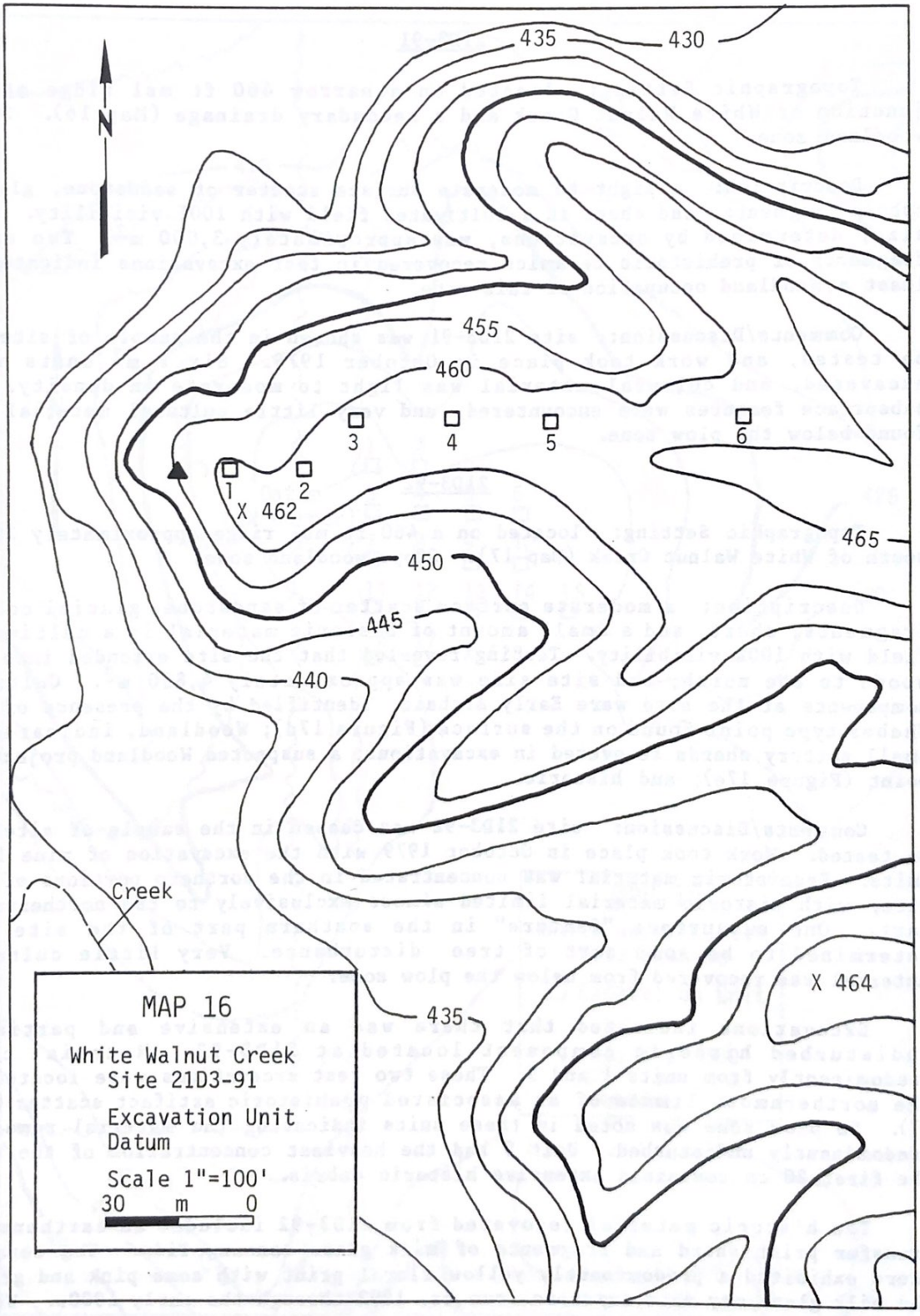
Topographic Setting: located on a 460 ft msl ridge approximately 200 m south of White Walnut Creek (Map 17). Slope woodland zone.

Description: a moderate surface scatter of sandstone, glacial cobble fragments, chert, and a small amount of historic material in a cultivated field with 100% visibility. Testing revealed that the site extended into the woods to the north, and site size was approximately 4,850 m^2. Cultural components at the site were Early Archaic, identified by the presence of one Thebes type point found on the surface (Figure 17d); Woodland, indicated by small pottery sherds recovered in excavations; a suspected Woodland projectile point (Figure 17e); and historic.

Comments/Discussion: site 21D3-92 was chosen in the sample of sites to be tested. Work took place in October 1979 with the excavation of nine 1 m^2 units. Prehistoric material was concentrated in the northern portions of the site, with historic material limited almost exclusively to the northernmost part. One subsurface "feature" in the southern part of the site was determined to be some sort of tree disturbance. Very little cultural material was recovered from below the plow zone.

Excavations indicated that there was an extensive and partially undisturbed historic component located at 21D3-92. Material came predominantly from units 1 and 9. These two test excavations were located at the northernmost limits of an associated prehistoric artifact scatter (Map 17). No plow zone was noted in these units indicating the material remained predominantly undisturbed. Unit 9 had the heaviest concentration of the two; the first 20 cm contained extensive historic debris.

The historic material recovered from 21D3-92 included an earthenware transfer print sherd and fragments of milk glass canning lids. The ceramic sherd exhibited a predominantly yellow floral print with some pink and green. The milk glass may date anywhere from ca. 1892 through the early 1900s. While


435
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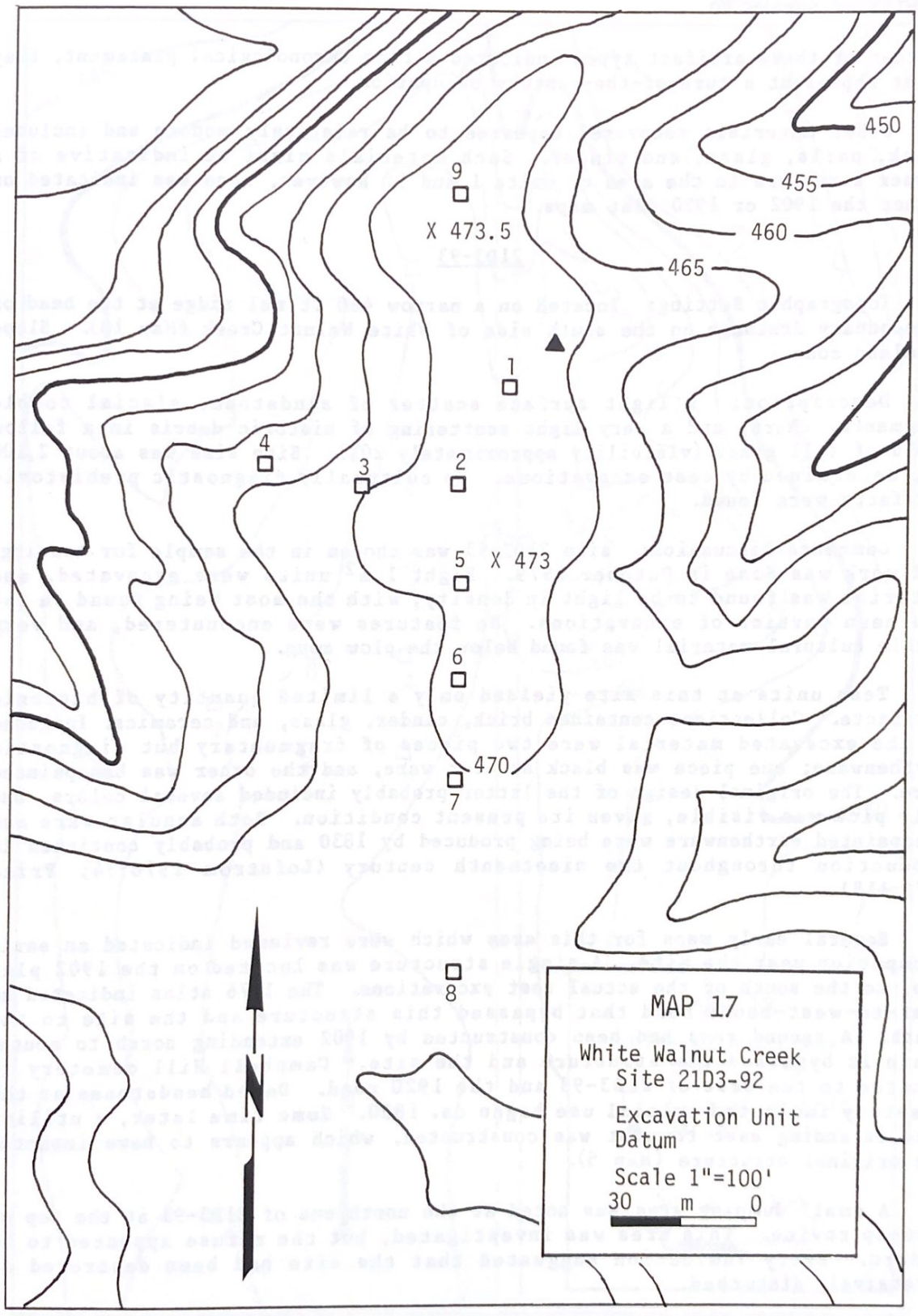
X 462
465
450
445
440
Creek
X 464
435
MAP 16
White Walnut Creek
Site 21D3-91
Excavation Unit
Datum
Scale 1"=100'
30 m 0


450
455
460
465
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X 473.5
1
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3
2
5
X 473
6
470
7
8
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MAP 17
White Walnut Creek
Site 21D3-92
Excavation Unit
Datum
Scale 1"=100'
30 m 0

neither of these artifact types indicated a firm chronological placement, they might represent a turn-of-the-century occupation.

Other materials recovered appeared to be relatively modern and included brick, nails, glass, and cinder. Such materials might be indicative of a former structure in the area of units 1 and 9; however, none was indicated on either the 1902 or 1920 plat maps.

21D3-93

Topographic Setting: located on a narrow 460 ft msl ridge at the head of a secondary drainage on the south side of White Walnut Creek (Map 18). Slope woodland zone.

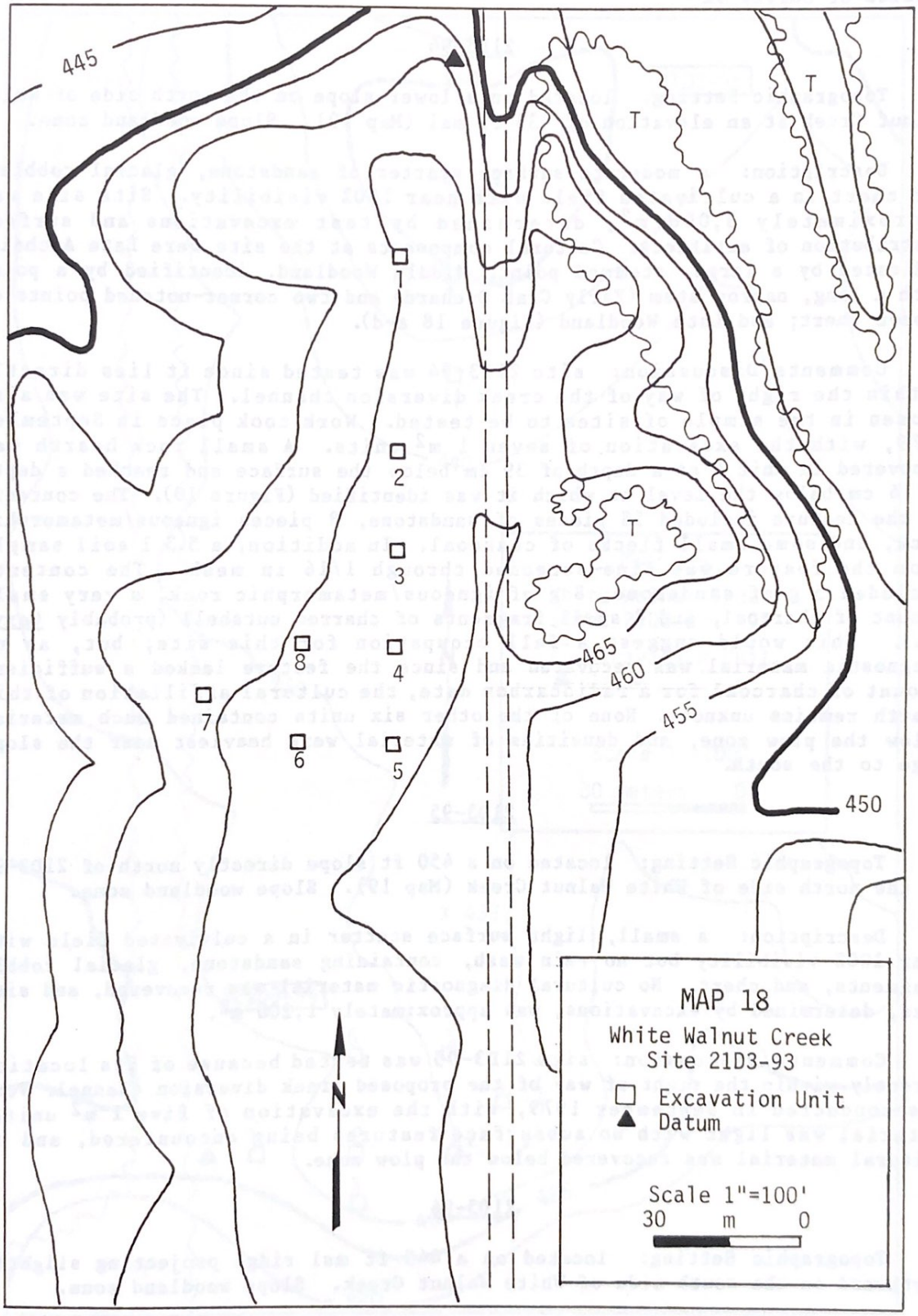
Description: a light surface scatter of sandstone, glacial cobble fragments, chert, and a very light scattering of historic debris in a fallow field of tall grass (visibility approximately 20%). Site size was about 2,100 m^2, determined by test excavations. No culturally diagnostic prehistoric artifacts were found.

Comments/Discussion: site 21D3-93 was chosen in the sample for testing, and work was done in October 1979. Eight 1 m^2 units were excavated, and material was found to be light in density, with the most being found in the southern portion of excavations. No features were encountered, and very little cultural material was found below the plow zone.

Test units at this site yielded only a limited quantity of historic artifacts. Collections contained brick, cinder, glass, and ceramics. Included in the excavated material were two pieces of fragmentary but diagnostic earthenware; one piece was black annular ware, and the other was handpainted ware. The original design of the latter probably included several colors, but only pink was visible, given its present condition. Both annular ware and handpainted earthenware were being produced by 1830 and probably continued in production throughout the nineteenth century (Lofstrom 1976:34; Price 1979:118).

Several early maps for this area which were reviewed indicated an early occupation near the site. A single structure was located on the 1902 plat map, to the south of the actual test excavations. The 1876 atlas indicated an east-to-west-bound road that bypassed this structure and the site to the south. A second road had been constructed by 1902 extending north to south; again it bypassed the structure and the site. Campbell Hill cemetery is located to the east of 21D3-93 and the 1920 road. Dated headstones at the cemetery indicated initial use began ca. 1850. Some time later, a utility road extending east to west was constructed, which appears to have impacted the original structure (Map 5).

A small dumping area was noted at the north end of 21D3-93 at the top of a steep ravine. This area was investigated, but the refuse appeared to be modern. Every indication suggested that the site had been destroyed or extensively disturbed.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450
N
MAP 18
White Walnut Creek
Site 21D3-93
Excavation Unit
Datum
Scale 1"=100'
30 m 0

21D3-94

Topographic Setting: located on a lower slope on the north side of White Walnut Creek at an elevation of 435 ft msl (Map 19). Slope woodland zone.

Description: a moderate surface scatter of sandstone, glacial cobbles, and chert in a cultivated field with near 100% visibility. Site size was approximately 3,000 m^2, determined by test excavations and surface distribution of artifacts. Cultural components at the site were Late Archaic, indicated by a large, stemmed point; Middle Woodland, identified by a point with a long, narrow stem (Early Crab Orchard) and two corner-notched points of Cobden chert; and Late Woodland (Figure 18 a-d).

Comments/Discussion: site 21D3-94 was tested since it lies directly within the right of way of the creek diversion channel. The site was also chosen in the sample of sites to be tested. Work took place in September 1979, with the excavation of seven 1 m^2 units. A small rock hearth was uncovered in unit 4 at a depth of 39 cm below the surface and reached a depth of 16 cm below the level at which it was identified (Figure 10). The contents of the feature included 58 pieces of sandstone, 8 pieces igneous/metamorphic rock, and some small flecks of charcoal. In addition, a 5.3 l soil sample from the feature was fine-screened through 1/16 in mesh. The contents included 5 g of sandstone, 8 g of igneous/metamorphic rock, a very small amount of charcoal, and 8 small fragments of charred nutshell (probably Carya sp.). This would suggest a fall occupation for this site; but, as no diagnostic material was recovered and since the feature lacked a sufficient amount of charcoal for a radiocarbon date, the cultural affiliation of this hearth remains unknown. None of the other six units contained much material below the plow zone, and densities of material were heaviest near the slope edge to the south.

21D3-95

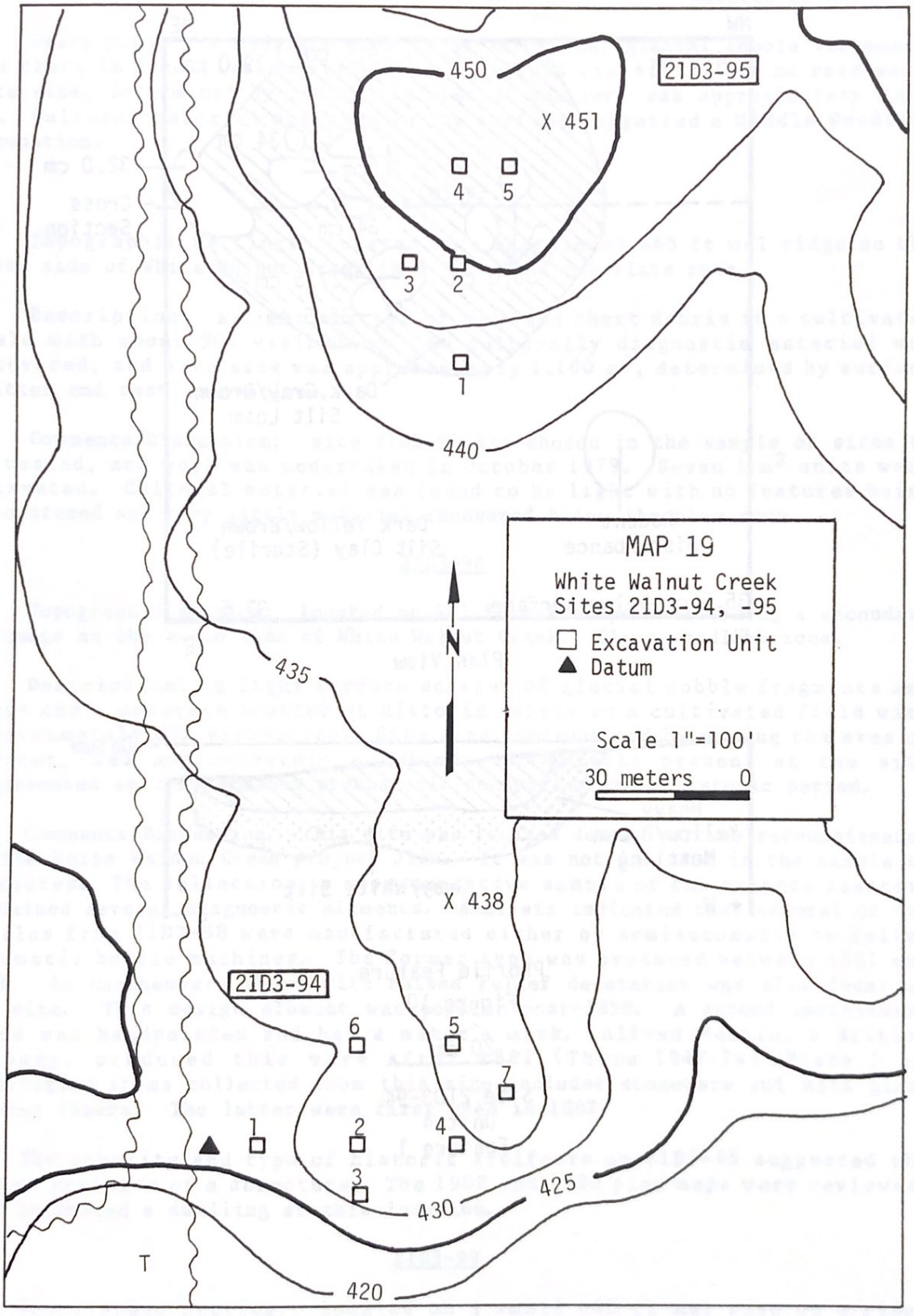
Topographic Setting: located on a 450 ft slope directly north of 21D3-94 on the north side of White Walnut Creek (Map 19). Slope woodland zone.

Description: a small, light surface scatter in a cultivated field with near 100% visibility but no rain wash, containing sandstone, glacial cobble fragments, and chert. No cultural diagnostic material was recovered, and site size, determined by excavations, was approximately 1,200 m^2.

Comments/Discussion: site 21D3-95 was tested because of its location directly within the right of way of the proposed creek diversion channel. Work was conducted in September 1979, with the excavation of five 1 m^2 units. Material was light with no subsurface features being encountered, and no cultural material was recovered below the plow zone.

21D3-96

Topographic Setting: located on a 445 ft msl ridge projecting slightly northward on the south side of White Walnut Creek. Slope woodland zone.


450
21D3-95
X 451
4
5
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1
440
MAP 19
White Walnut Creek
Sites 21D3-94, -95
Excavation Unit
Datum
N
435
Scale 1"=100'
30 meters 0
X 438
21D3-94
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430
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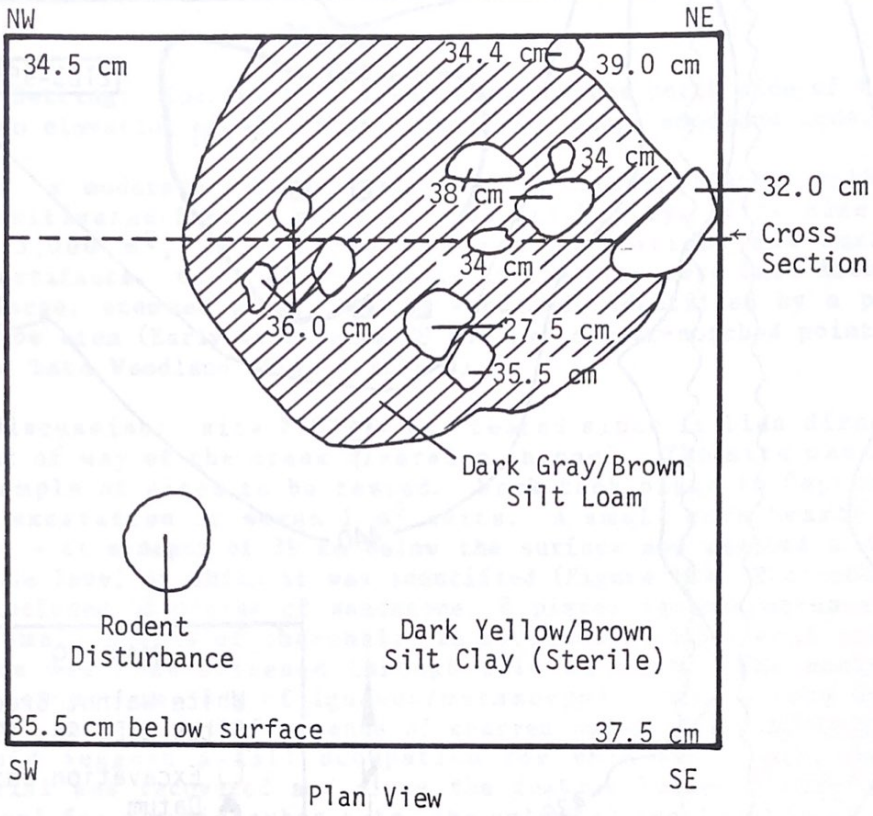
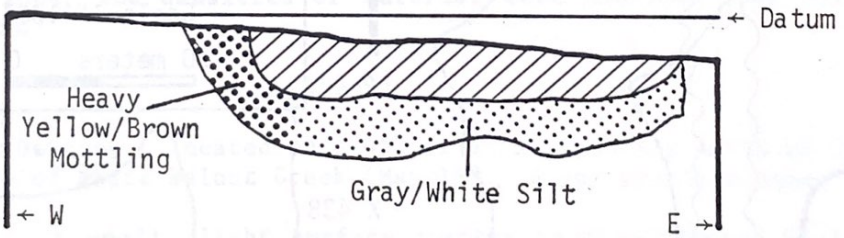


Plan View



Profile Feature

Figure 10

20 cm

Site 21D3-94
Unit 4
Feature 1

Description: a moderate scatter of sandstone, glacial cobble fragments, and chert in a cultivated field with near 100% visibility but no rain wash. Site size, determined by pacing the area of acatter, was approximately 3,000 m^2. Cultural material observed on the surface suggested a Middle Woodland occupation.

21D3-97

Topographic Setting: located on a near-level 445 ft msl ridge on the south side of White Walnut Creek (Map 9). Post oak flats zone.

Description: a light scatter of rock and chert debris in a cultivated field with about 90% visibility. No culturally diagnostic material was recovered, and site size was approximately 1,100 m^2, determined by surface scatter and test excavations.

Comments/Discussion: site 21D3-97 was chosen in the sample of sites to be tested, and work was undertaken in October 1979. Seven 1 m^2 units were excavated. Cultural material was found to be light with no features being encountered and very little material recovered below the plow zone.

21D3-98

Topographic Setting: located on 445 ft msl slope overlooking a secondary drainage on the south side of White Walnut Creek. Slope woodland zone.

Description: a light surface scatter of glacial cobble fragments and chert and a moderate scatter of historic debris in a cultivated field with approximately 80% visibility. Site size, determined by pacing the area of scatter, was approximately 4,200 m^2. Components present at the site represented an undetermined prehistoric occupation and a historic period.

Comments/Discussion: this site was located during surface reconnaissance of the White Walnut Creek project area. It was not included in the sample to be tested. The collection, a representative sample of the surface scatter, contained several diagnostic elements. Analysis indicated that several of the bottles from 21D3-98 were manufactured either by semiautomatic or fully-automatic bottle machines. The former type was produced between 1881 and 1903. An earthenware sherd with raised relief decoration was also found at the site. This design element was popular post-1850. A second earthenware sherd was handpainted and had a maker's mark. Alfred Meakin, a British company, produced this ware after 1881 (Thorn 1947:74) (Plate 1 e). Utilitarian items collected from this site included stoneware and milk glass canning liners. The latter were first used in 1882.

The quantity and type of historic artifacts on 21D3-98 suggested the former presence of a structure. The 1902 and 1920 plat maps were reviewed; both indicated a dwelling at this location.

21D3-99

Topographic Setting: located on a small 446 ft msl rise on a ridge

overlooking the south side of White Walnut Creek (Map 20). Slope woodland zone.

Description: a light to moderate scatter of sandstone, glacial cobble fragments, chert, and a very light scatter of historic material in a wheat field with about 20% visibility. Site size was approximately 2,000 m^2, determined by test excavations. A Woodland component was indicated by the presence of two fragmented grit tempered sherds.

Comments/Discussion: site 21D3-99 was tested, and work was conducted in September 1979, with the excavation of 10 1 m^2 units. A general surface collection also was made at this site. Material was found to be light to moderate in density, and no subsurface features were encountered. Below the plow zone, material was practically nonexistent, and the general surface collection produced little material due to poor visibility conditions.

Brick, metal, stoneware, and cinder occurred in small quantities in almost all units at 21D3-99. There was no evidence of early structures in this area nor was there a modern structure nearby. No diagnostic material was found during testing which would indicate the historic cultural affiliation or function of this site.

21D3-100

Topographic Setting: located south of White Walnut Creek on a small rise at 455 ft msl in a field with slightly rolling topography. Post oak flats zone.

Description: a very light scatter of glacial cobble fragments and chert in a cultivated field with about 95% visibility. The scatter seemed limited to an area 25 m^2. No diagnostic cultural material was observed.

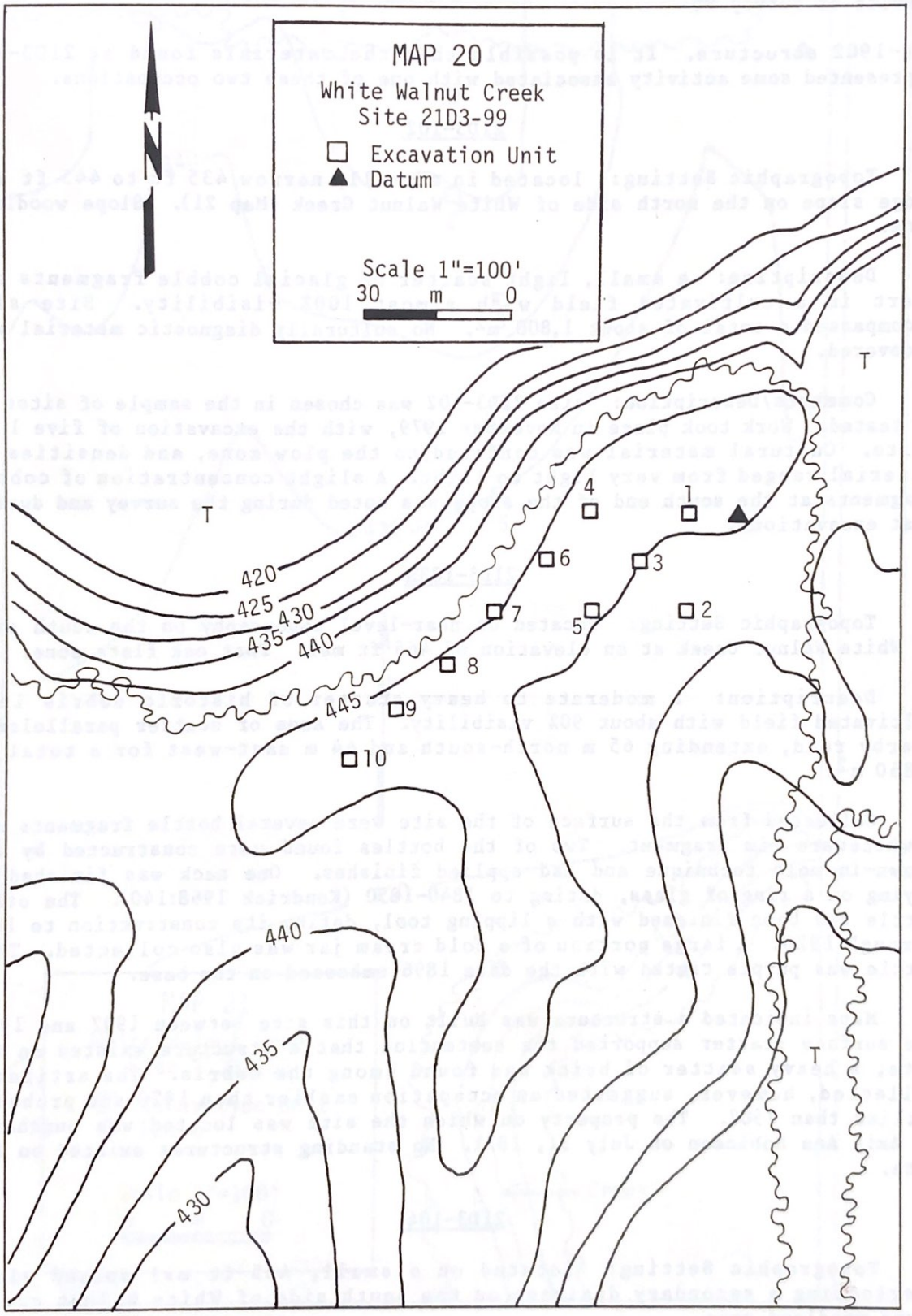
21D3-101

Topographic Setting: located south of White Walnut Creek on a small rise at 460 ft msl in a field with rolling topography (Map 11). Post oak flats zone.

Description: a very light scatter of glacial cobble fragments, chert debris, and historic material in a cultivated field with about 95% visibility. No culturally diagnostic material was recovered from either the survey or from test excavations. The area scatter covered about 3,200 m^2.

Comments/Discussion: site 21D3-101 was chosen in the sample of sites to be tested. Work took place in October 1979, with the excavation of eight 1 m^2 units. Cultural material was very light in all units, and none was recovered below the plow zone. No subsurface features were encountered.

A small quantity of glass, metal, and brick and an extensive quantity of cinder were identified on the surface and in test excavations. None of the historic cultural material was useful in establishing temporal placement. The 1902 and 1920 maps also were consulted. No structures were indicated at this location. Site 21D3-101 was located southeast of 21D3-113 and northeast of a


MAP 20
White Walnut Creek
Site 21D3-99
Excavation Unit
Datum
Scale 1"=100'
30 m 0
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pre-1902 structure. It is possible that the materials found at 21D3-101 represented some activity associated with one of these two occupations.

21D3-102

Topographic Setting: located in a small, narrow 435 ft to 445 ft msl ridge slope on the north side of White Walnut Creek (Map 21). Slope woodland zone.

Description: a small, light scatter of glacial cobble fragments and chert in a cultivated field with almost 100% visibility. Site size encompassed a total of about 1,800 m^2. No culturally diagnostic material was recovered.

Comments/Description: site 21D3-102 was chosen in the sample of sites to be tested. Work took place in November 1979, with the excavation of five 1 m^2 units. Cultural material was confined to the plow zone, and densities of material ranged from very light to light. A slight concentration of cobble fragments at the south end of the slope was noted during the survey and during test excavations.

21D3-103H

Topographic Setting: located on near-level topography on the south side of White Walnut Creek at an elevation of 465 ft msl. Post oak flats zone.

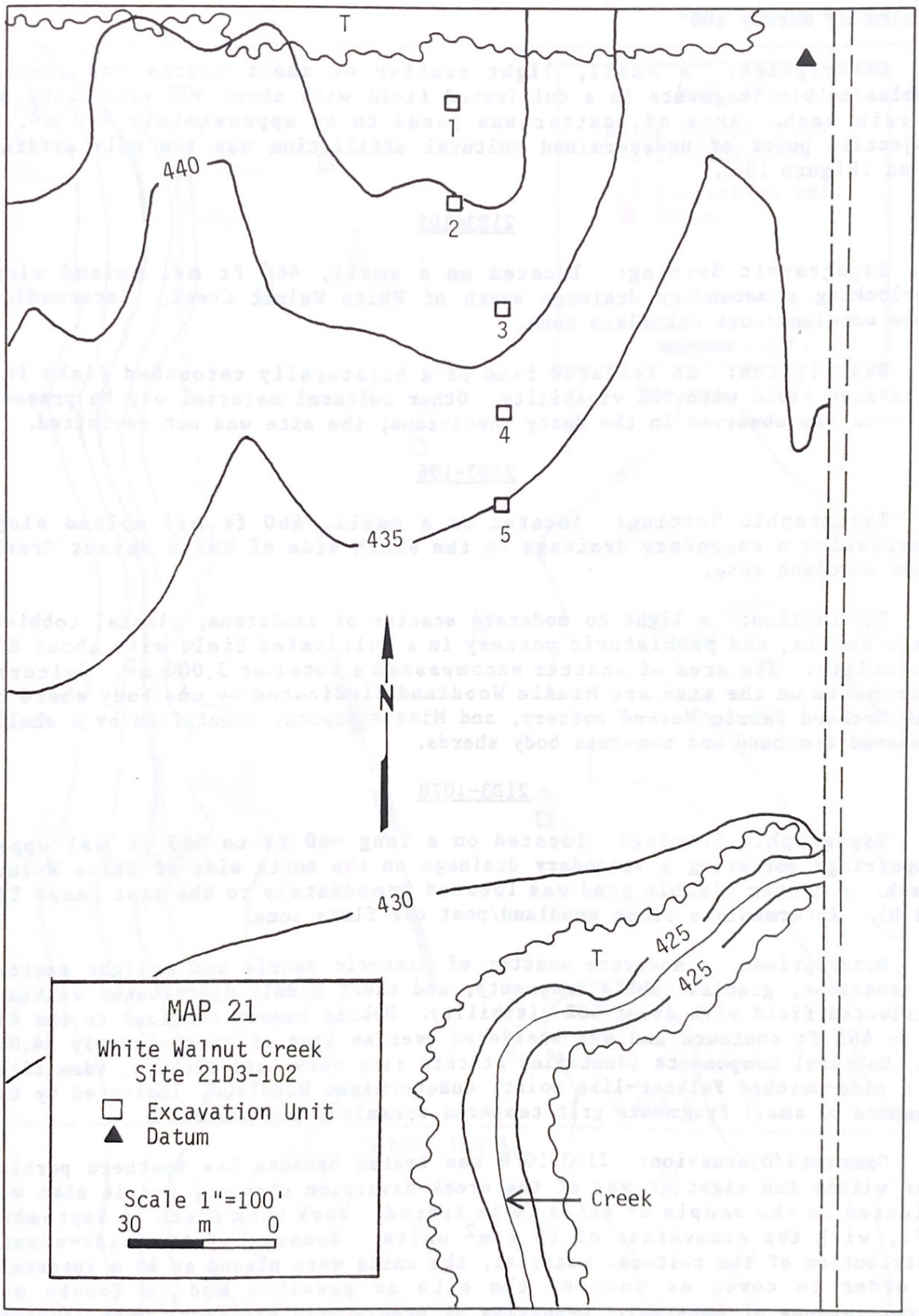
Description: a moderate to heavy scatter of historic debris in a cultivated field with about 90% visibility. The area of scatter paralleled a nearby road, extending 65 m north-south and 44 m east-west for a total of 2,860 m^2.

Collected from the surface of the site were several bottle fragments and a whiteware rim fragment. Two of the bottles found were constructed by the blown-in-mold technique and had applied finishes. One neck was finished by laying on a ring of glass, dating to 1840-1850 (Kendrick 1968:140). The other bottle had been finished with a lipping tool, dating its construction to 1850 through 1920. A large portion of a cold cream jar was also collected. This bottle was purple tinted with the date 1896 embossed on the base.

Maps indicated a structure was built on this site between 1902 and 1920. The surface scatter supported the contention that a structure existed on the site; a heavy scatter of brick was found among the debris. The artifacts collected, however, suggested an occupation earlier than 1920 and probably earlier than 1902. The property on which the site was located was purchased by Axie Ann Robinson on July 31, 1871. No standing structures existed on the site.

21D3-104

Topographic Setting: located on a small, 465 ft msl upland slope overlooking a secondary drainage on the south side of White Walnut creek. Slope woodland zone.


T
1
440
2
3
4
5
435
N
430
T
425
425
Creek
MAP 21
White Walnut Creek
Site 21D3-102
Excavation Unit
Datum
Scale 1"=100'
30 m 0

Results of Survey 100

Description: a small, light scatter of chert debris and glacial cobbles/cobble fragments in a cultivated field with about 90% visibility but no rain wash. Area of scatter was paced to be approximtely 400 m^2. A projectile point of undetermined cultural affiliation was the only artifact found (Figure 18e).

21D3-105

Topographic Setting: located on a small, 460 ft msl upland slope overlooking a secondary drainage south of White Walnut Creek. Intermediate slope woodland/post oak flats zone.

Description: an isolated find of a bilaterally retouched flake in a cultivated field with 90% visibility. Other cultural material may be present, but none was observed in the dusty conditions; the site was not revisited.

21D3-106

Topographic Setting: located on a small, 460 ft msl upland slope overlooking a secondary drainage on the south side of White Walnut Creek. Slope woodland zone.

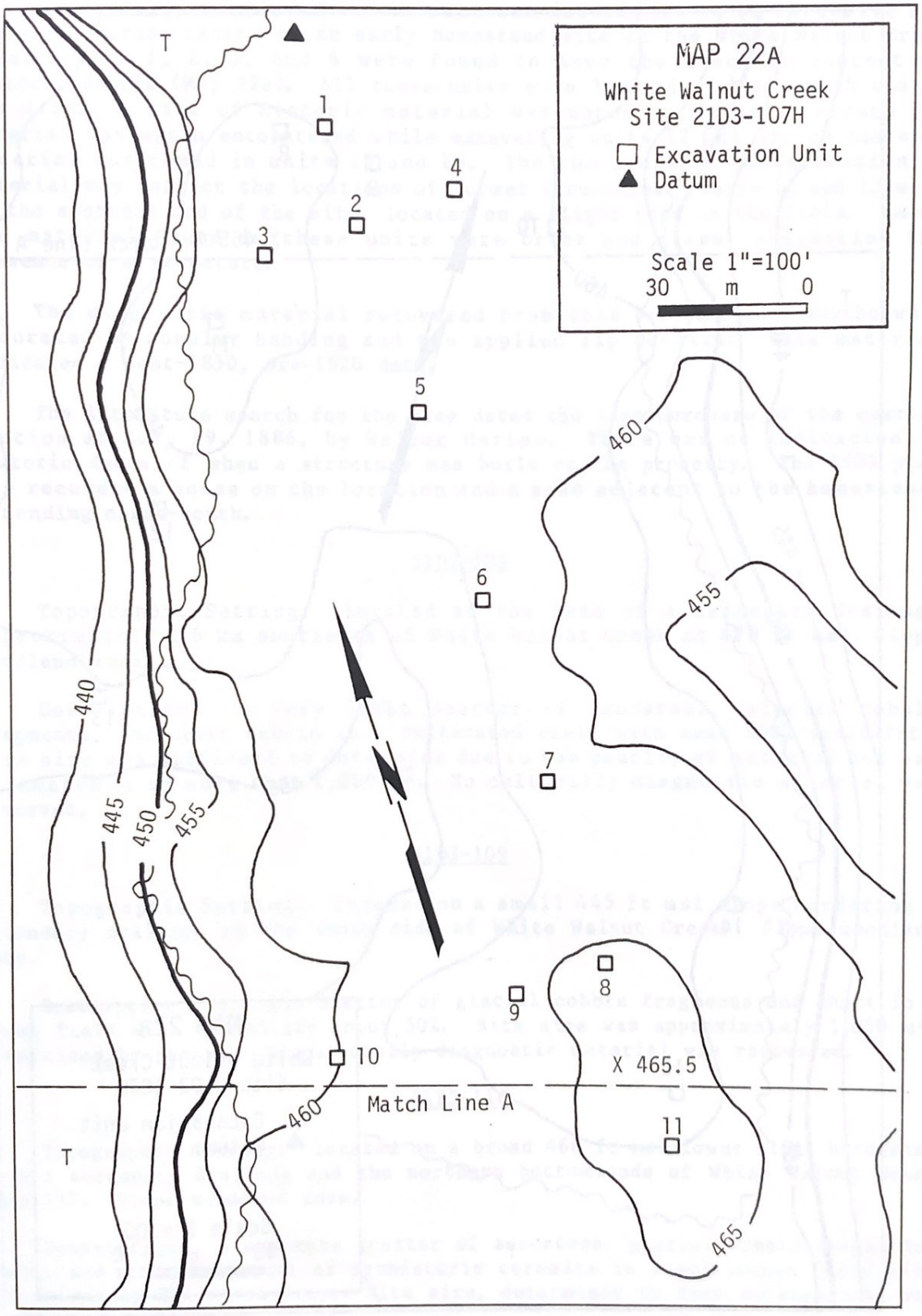
Description: a light to moderate scatter of sandstone, glacial cobbles, chert debris, and prehistoric pottery in a cultivated field with about 80% visibility. The area of scatter encompassed a total of 3,000 m^2. Cultural components on the site are Middle Woodland, indicated by one body sherd of Crab Orchard Fabric Marked pottery, and Mississippian, identified by a shell-tempered rimsherd and numerous body sherds.

21D3-107H

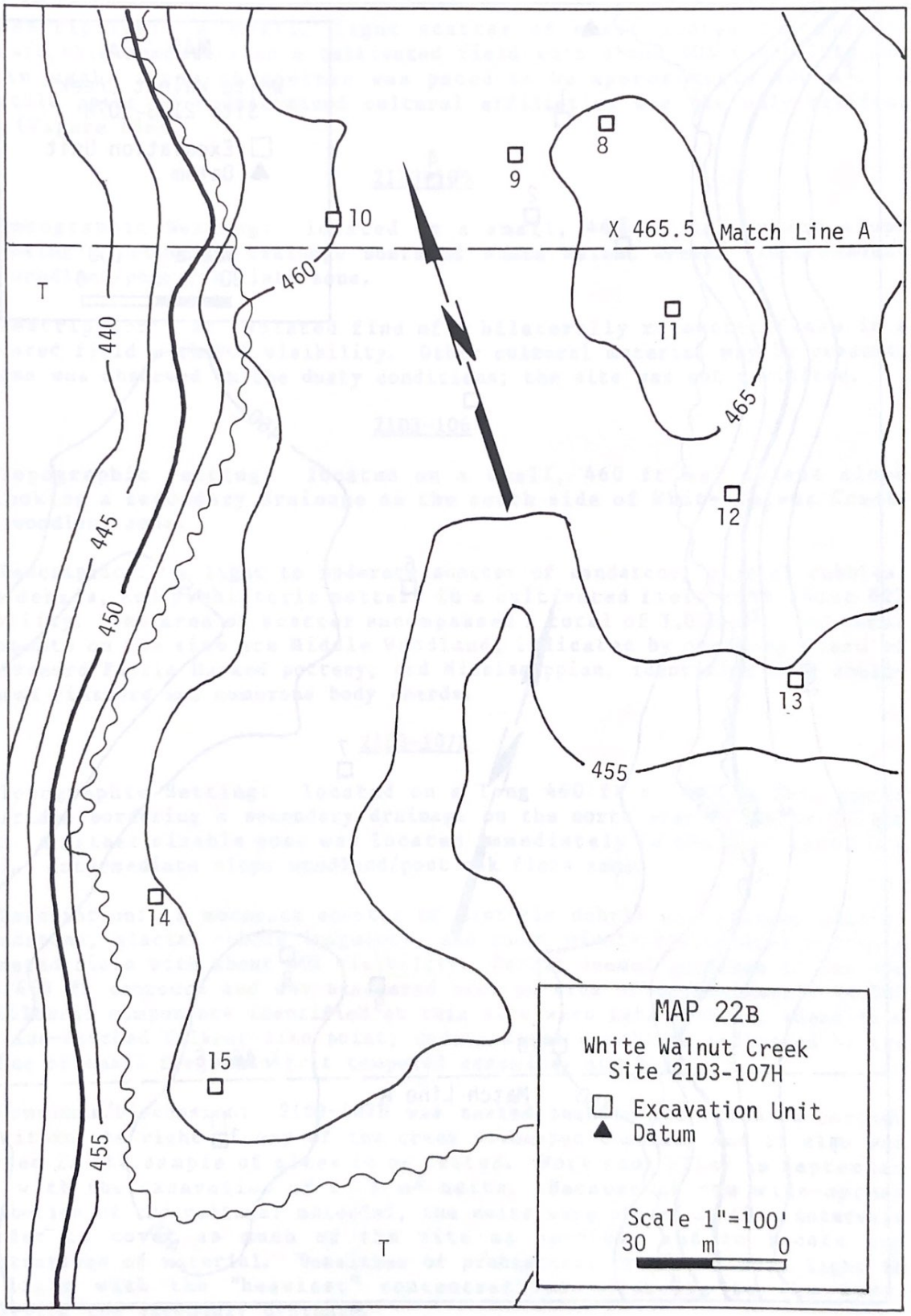
Topographic Setting: located on a long 460 ft to 465 ft msl upper slope/ridge bordering a secondary drainage on the north side of White Walnut Creek. A rather sizable pond was located immediately to the east (maps 22a and b). Intermediate slope woodland/post oak flats zone.

Description: a moderate scatter of historic debris and a light scatter of sandstone, glacial cobble fragments, and chert widely distributed within a cultivated field with about 60% visibility. Debris seemed confined to the 460 ft to 465 ft contours and was scattered over an area of approximately 24,000 m^2. Cultural components identified at this site were Late Archaic, identified by a side-notched Falkner-like point; undetermined Woodland, indicated by the presence of small fragments grit tempered ceramics; and historic.

Comments/Discussion: 21D3-107H was tested because its northern portion lies within the right of way of the creek diversion channel, and it also was selected in the sample of sites to be tested. Work took place in September 1979, with the excavation of 15 1 m^2 units. Because of the wide-spread distribution of the cultural material, the units were placed at 40 m intervals in order to cover as much of the site as possible and to locate any concentrations of material. Densities of prehistoric artifacts were light to very light with the "heaviest" concentrations occurring to the west, paralleling the secondary drainage.


MAP 22A
White Walnut Creek
Site 21D3-107H
Excavation Unit
Datum
Scale 1"=100'
30 m 0
T
1
2
3
4
5
6
7
8
9
10
11
440
445
450
455
460
455
460
465
X 465.5
Match Line A
T

Results of Survey 102



The historic component on the site was determined to be extensive and probably representative of an early homestead site in the White Walnut Creek area. Units 1, 2, 3, and 4 were found to have the heaviest content of historic debris (Map 22a). All these units were located at the north end of the site. A lack of historic material was noted in units 5 through 11. Material was again encountered while excavating units 12 and 13; no historic material was found in units 14 and 15. The two areas of concentration of material may reflect the locations of former structures. Units 12 and 13 were on the southern end of the site, located on a slight rise in the field. Among the material found in these units were brick and glass, suggesting the presence of a structure.

The diagnostic material recovered from this site included earthenware decorated by annular banding and two applied lip bottles. This material indicated a post-1850, pre-1920 date.

The literature search for the area dated the land purchase of the quarter section at July 19, 1886, by Walter Marlow. There was no indication in historic deeds of when a structure was built on the property. The 1902 plat map recorded a house on the location and a road adjacent to the homestead, extending north-south.

21D3-108

Topographic Setting: located at the head of a secondary drainage approximately 1.6 km southeast of White Walnut Creek at 470 ft msl. Slope woodland zone.

Description: a very light scatter of sandstone, glacial cobble fragments, and chert debris in a cultivated field with near 100% visibility. Site size was difficult to determine due to the paucity of material but was estimated at no more than 1,000 m^2. No culturally diagnostic material was observed.

21D3-109

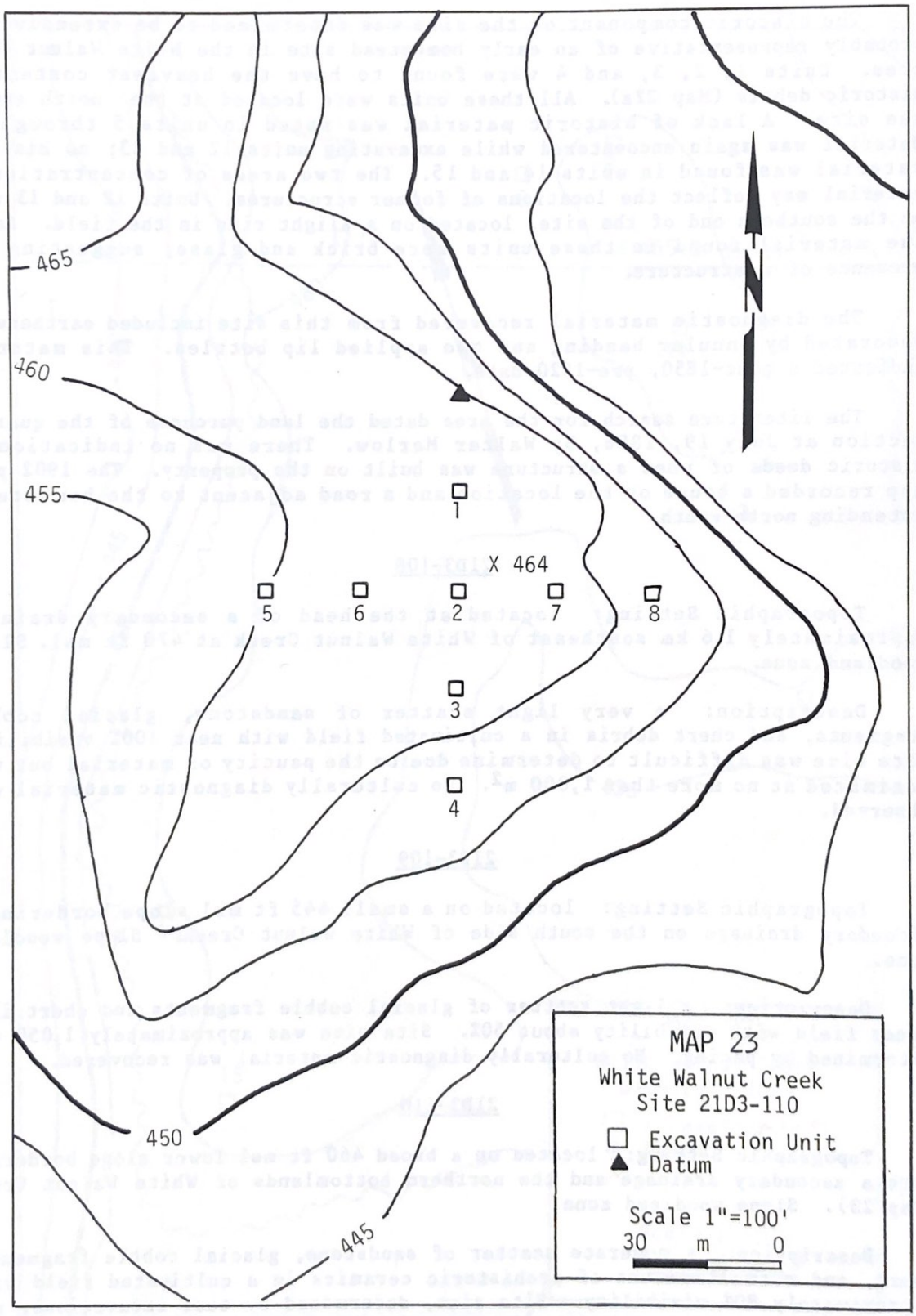
Topographic Setting: located on a small 445 ft msl slope bordering a secondary drainage on the south side of White Walnut Creek. Slope woodland zone.

Description: a light scatter of glacial cobble fragments and chert in a wheat field with visibility about 50%. Site size was approximately 1,050 m^2, determined by pacing. No culturally diagnostic material was recovered.

21D3-110

Topographic Setting: located on a broad 460 ft msl lower slope bordering both a secondary drainage and the northern bottomlands of White Walnut Creek (Map 23). Slope woodland zone.

Description: a moderate scatter of sandstone, glacial cobble fragments, chert, and a small amount of prehistoric ceramics in a cultivated field with approximately 80% visibility. Site size, determined by test excavations, was


465
460
455
450
445
N
1
X 464
5
6
2
7
8
3
4
MAP 23
White Walnut Creek
Site 21D3-110
Excavation Unit
Datum
Scale 1"=100'
30 m 0

approximately 6,400 m^2. Diagnostic cultural material recovered from the site indicated a Archaic occupation (Figure 19a) and a projectile point blade fragment of unknown cultural affiliation (Figure 19b).

Comments/Discussion: site 21D3-110 was tested because of its location within the proposed creek diversion channel, as well as being chosen in the sample of sites to be tested. Work was conducted in August 1979, with eight 1 m^2 units being excavated. Cultural material was light to moderate in density, with no features being encountered and very little material recovered below the plow zone.

21D3-111

Topographic Setting: located on a narrow 470 ft msl ridge bordering a secondary drainage north of White Walnut Creek. Slope woodland zone.

Description: a light surface scatter of sandstone, glacial cobble fragments, and chert widely distributed in a cultivated field with about 80% visibility. The scatter seemed confined to the higher portions of the ridge and probably extended into the woods to the south. Estimated site area for that portion within the cultivated field is approximately 2,800 m^2. No culturally diagnostic material was found.

21D3-112

Topographic Setting: located on a small, 467 ft msl lower slope bordering the northern bottomlands of White Walnut Creek (Map 24). Slope woodland zone.

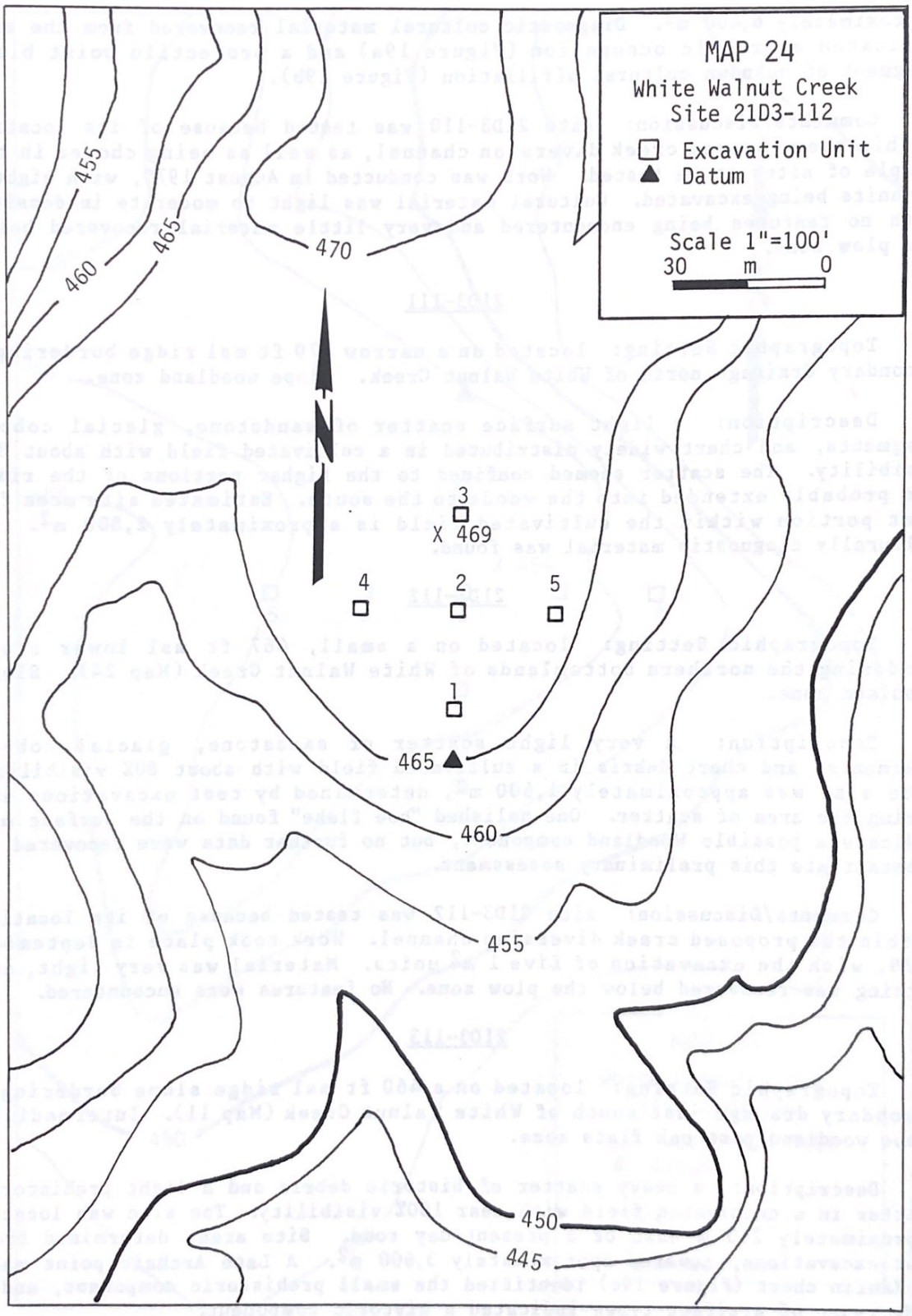
Description: a very light scatter of sandstone, glacial cobble fragments, and chert debris in a cultivated field with about 80% visibility. Site size was approximately 1,600 m^2, determined by test excavations and pacing the area of scatter. One polished "hoe flake" found on the surface may indicate a possible Woodland component, but no further data were recovered to substantiate this preliminary assessment.

Comments/Discussion: site 21D3-112 was tested because of its location within the proposed creek diversion channel. Work took place in September 1979, with the excavation of five 1 m^2 units. Material was very light, and nothing was recovered below the plow zone. No features were encountered.

21D3-113

Topographic Setting: located on a 460 ft msl ridge slope bordering a secondary drainge just south of White Walnut Creek (Map 11). Intermediate slope woodland/post oak flats zone.

Description: a heavy scatter of historic debris and a light prehistoric scatter in a cultivated field with near 100% visibility. The site was located approximately 250 m east of a present-day road. Site area, determined from test excavations, covered approximately 3,600 m^2. A Late Archaic point made of Kaolin chert (Figure 19c) identified the small prehistoric component, and a wide range of artifact types indicated a historic component.


MAP 24
White Walnut Creek
Site 21D3-112
Excavation Unit
Datum
Scale 1"=100'
30 m 0
N
470
465
460
455
450
445
X 469
1
2
3
4
5

Comments/Discussion: site 21D3-113 was chosen in the sample of sites to be tested, and work took place in October 1979, with the excavation of eight 1 m^2 units. Historic cultural material was common across the site with concentrations heaviest in units 3, 4, 6, and 7. This material included diagnostic bottle and earthenware fragments and two small historic pipe fragments. Nondiagnostic material included brick, glass, metal, nails, and stoneware. Such an extensive scatter of utilitarian artifacts and construction materials would suggest a homestead site.

Diagnostic earthenware included design elements from almost every category. Handpainted wares, transfer prints, annular ware (Plate 1 c), and raised relief designs were all represented. Handpainted porcelain also was found. These artifacts indicated a date as early as 1830 and as late as 1900s. Bottles had handtooled lips and dated between 1850 and 1920. Clay smoking pipes were made as late as 1953. A realistic date for this assemblage is post-1850 and pre-1900.

The land on which this site was located was purchased by Margaret Abernathy, September 28, 1841. The purchase was the third parcel of land to be sold within the project area. Although the diagnostic artifacts and the early purchase date of the property would suggest an early date of the occupation of 21D3-113, plat maps do not substantiate this. Neither the 1902 nor the 1920 maps located a structure in this quarter section. It is possible that the site was no longer occupied by the turn of the century. No structures were indicated in this quarter section in either the 1924 15′ USGS quadrangle or the 1974 7.5′ USGS quadrangle.

21D3-114

Topographic Setting: located upon a small, narrow 450 ft msl ridge slope directly bordering the south side of White Walnut Creek at its junction with a secondary drainage. Slope woodland zone.

Description: a light surface scatter of sandstone, glacial cobble fragments, chert debris, and prehistoric ceramics in a cultivated field with approximately 90% visibility. The area of scatter covered about 1,200 m^2. A Middle Woodland occupation was suggested by the presence of a corner-notch point similar to Maxwell's type 4F (1951:270) (Figure 19e).

21D3-115

Topographic Setting: located on the central portion of a 439 ft msl ridge between two secondary drainages on the south side of White Walnut Creek. Slope woodland zone.

Description: one projectile point/knife was found on the surface while shovel testing in a field of heavy weeds. No other material was observed on the surface, and none was encountered in the shovel tests. The projectile point was an Early Archaic Dovetail with basal grinding and beveled lateral edges on the blade (Figure 19f).

Comments/Discussion: site 21D3-115 was selected for testing; however,

the area was subsequently used by Consolidation Coal Company as a stock-piling site for topsoil, and it was necessary to select an alternative site.

21D3-116

Topographic Setting: located on a small, 475 ft msl rise at the head of a secondary drainage about 1.4 km southeast of White Walnut Creek. Slope woodland zone/post oak flats transition.

Description: a heavy surface scatter of historic debris (brick, glass, ceramics, etc.) in a recently plowed field. Site size was approximately 500 to 600 m^2. One enigmatic pitted stone may represent a possible prehistoric component, but no other material was found to confirm this.

Comments/Discussion: this site was encountered during surface reconnaissance; it is outside the permit area. Field observations suggested that this scatter represented a former homestead site. The occupants of a house located to the east were interviewed. Sherman Marlow indicated that a house had been located on the site and that it had belonged to Warren Ahler, his uncle. He could not recall the actual year the house had been built, but he was certain it was post-1900.

21D3-117

Topographic Setting: located near the head of a secondary drainage due west of 21D3-73 and approximately 1.3 km southeast of White Walnut Creek at 470 ft msl. Post oak flats zone.

Description: a light surface scatter of sandstone, glacial cobble fragments, and chert in a recently cultivated field with about 90% visibility but no rain wash. Site area was estimated at approximately 2,100 m^2. No culturally diagnostic material was observed.

21D3-118

Topographic Setting: located in gently rolling topography at 500 ft msl 1.3 km southeast of White Walnut Creek. Post oak flats zone.

Description: a light surface scatter of sandstone, glacial cobble fragments, and chert in a recently plowed field with about 40% visibility. Site size was difficult to determine due to the dusty conditions but was estimated at 1,800 m^2. No culturally diagnostic material was observed.

21D3-119

Topographic Setting: located at 470 ft msl on a ridge slope at the fork of a secondary drainage south of White Walnut Creek. Slope woodland zone.

Description: several pieces of sandstone and one waste flake were observed in shovel testing a grassy field east of an unoccupied modern house. Site size was undetermined, and no culturally diagnostic material was recovered.

21D3-120

Topographic Setting: located on a narrow, 450 ft to 455 ft msl ridge slope bordering a secondary drainage and the bottomlands north of White Walnut Creek (Map 8). Slope woodland zone.

Description: a moderate surface scatter of sandstone, glacial cobble fragments, and chert and a light scatter of historic debris in a planted field with approximately 75% visibility. The site is located on the ridge immediately west of 21D3-68. Site size, determined by test excavations, was approximately 3,000 m^2. Cultural components present at the site were Middle Woodland, indicated by a point similar to Maxwell's type 4I (1951:270-271) made of Cobden chert; Late Woodland, identified by the presence of a Lowe flared base point; and historic (Figure 20a-d).

Comments/Discussion: site 21D3-120 was tested because of its location within the right of way of the creek diversion channel, and it also was chosen in the sample for testing. Work took place in August 1979, with 14 1 m^2 units being excavated at alternate 10 m intervals ("checkerboard" fashion). Cultural material was light to moderate in density with no apparent areas of concentrations. The topsoil was badly eroded in places, a situation similar to that of 21D3-68. No subsurface features were encountered, and no material was recovered below the plow zone.

The historic component at this location was very limited. Only a light scatter of brick and nails was recovered for test excavations. The extensive historic scatter of 21D3-108 on an adjacent ridge had tentatively been identified as a homestead occupation. Two concentrations of material recognized at this location were believed to be a house structure and an outbuilding. The nature of the assemblage on 21D3-120 suggested an outlying activity area associated with the nearby occupation site of 21D3-68 (Map 8).

21D3-121H

Topographic Setting: located on a 440 ft msl ridge overlooking a secondary drainage on the south side of White Walnut Creek. Post oak flats zone.

Description: a collapsed house and two associated outbuildings were investigated at this location. A local informant, William Albers, identified the owner as Oscar Bardle, who later sold this house to a Mr. Shirk. Albers indicated that no one has lived in or used the house for at least three years. Prior to this, the structure had been used as a hunting cabin. The collapsed cabin revealed a central, and probably original, log structure beneath the debris. Several of the logs appeared to be hand hewn. Obviously, the house was constructed in several stages; and, when complete, it was a large two-story frame structure.

An old trunk was found outside the house, containing historic ceramics, a Doan's pill container (patent date October 1, 1937), and a spoon. These items were collected along with a glass vial, fragments from two green pressed-glass plates, and several "Cracker Jack" prizes. The toys were two plastic tops, obviously modern, and a rusty metal whistle inscribed with

"Cracker Jacks." An earthenware rim fragment found among this material was a multi-colored transfer print with a gilded scalloped edge (Plate 1 b). The later design motif was popular after 1890. A whole plate was pieced together. It had a pink surface glaze with a raised relief design and a maker's mark on the base, which indicates the plate was made by Limoses China Company located in Sebring, Ohio. A reference to this company could not be found in any of the sources reviewed. The mark identified a patent date of June 12, 1928.

The log structure exposed by the collapse of Bardle's hunting cabin was probably built between 1882 and 1902. This quarter section of land was purchased by Fredrick Kuhn on November 4, 1882. Plat books verified the presence of a structure in 1902. The collection of artifacts from the site also indicated a late 1800s - early 1900s occupation. This site has since been destroyed by mining activities.

21D3-122

Topographic Setting: located on a 475 ft msl knob at the end of a long narrow ridge overlooking a secondary drainage and the bottomlands south of White Walnut Creek (Map 25). Slope woodland zone.

Description: site is located in woods, and shovel testing recovered an abundance of sandstone and a Dalton projectile point/knife. Site size was estimated at approximately 4,800 m^2, determined by pacing the ridge top and by test excavations. Besides the Dalton point (Figure 20f), a sizable Woodland component also was indicated by the presence of Late Woodland ceramics and a Late Woodland projectile point (Figure 20e) recovered in test excavations.

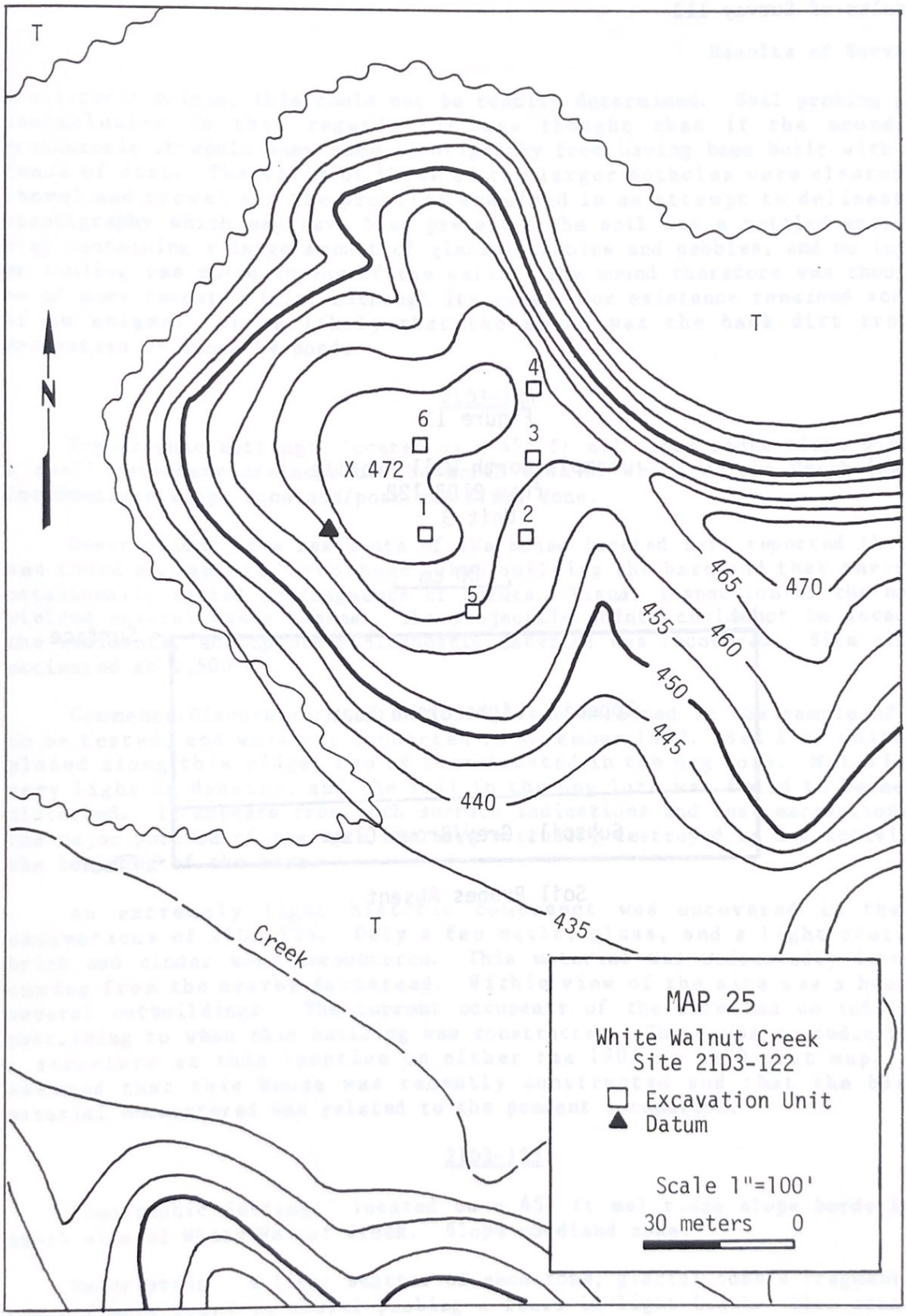
Comments/Discussion: 21D3-122 was selected in the sample of sites to be tested. Work took place in November 1979, with the excavation of six 1 m^2 units. The soil was a light brown loess overlain with a shallow gray humus zone and showed no evidence of every having been cultivated (Figure 11). Units were dug in 10 cm levels, and cultural materials was recovered to an average depth of 30 cm, being moderate to heavy in density. The presence of charred nutshell and the abundance of sandstone within the midden -- combined with the fact that the site had never been cultivated -- indicated a high probability that subsurface features existed on the site, although none was encountered in the six units excavated.

21D3-123

Topographic Setting: located in the bottomlands approximately 100 m south of White Walnut Creek. Bottomland forest zone.

Description: a large earthen mound and associated pond located by pedestrian survey of woods. The mound is approximately 4 m high and 30 m in diameter with several large "potholes" dug into the center and sides. One small metal screw was the only cultural artifact observed in the vicinity of the mound.

Comments/Discussion: Although the presence of numerous holes dug into the mound indicated that some enterprising individual(s) thought it to be of


T
T
T
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X 472
1
2
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4
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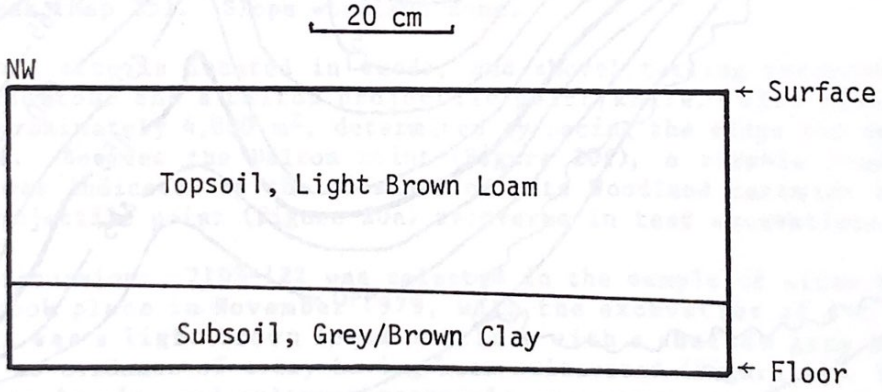
6
465
470
455
460
450
445
440
435
Creek
MAP 25
White Walnut Creek
Site 21D3-122
Excavation Unit
Datum
Scale 1"=100'
30 meters 0

Results of Survey 112

Figure 11

Sample North Wall Profile
from 21D3-122
Unit 3



Soil Probes Absent

prehistoric origin, this could not be readily determined. Soil probing proved inconclusive in this regard. It was thought that if the mound were prehistoric it would show some stratigraphy from having been built with small loads of dirt. The walls of three of the larger potholes were cleared with shovel and trowel and the profiles examined in an attempt to delineate any stratigraphy which may have been present. The soil was a mottled gray-brown clay containing a large amount of glacial cobbles and pebbles, and no layering or banding was noted in any of the walls. The mound therefore was thought to be of more recent origin, although its reason for existence remained somewhat of an enigma. It is likely that the mound was the back dirt from the excavation of a nearby pond.

21D3-124

Topographic Setting: located on a 455 ft msl upper ridge slope bordering a small secondary drainage on the north side of White Walnut Creek (Map 26). Intermediate slope woodland/post oak flats zone.

Description: the residents of the house located here reported that they had found a complete "arrowhead" when building the barn and that their hogs occasionally rooted up fragments of points. Visual inspection of the hog lot yielded several waste flakes. The projectile points could not be located by the residents, and no other diagnostic material was recovered. Site size was estimated at 2,500 m^2.

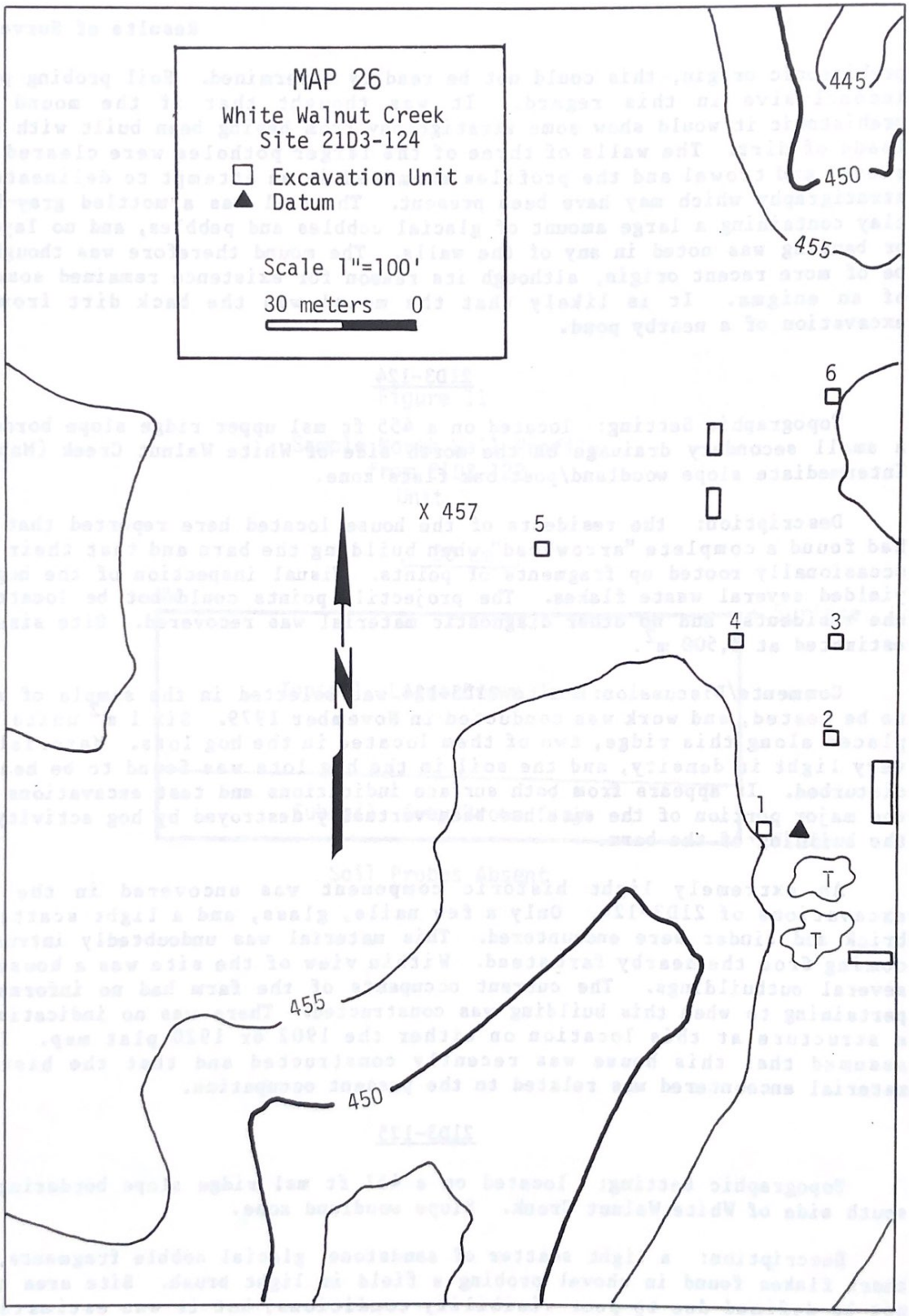
Comments/Discussion: site 21D3-124 was selected in the sample of sites to be tested, and work was conducted in November 1979. Six 1 m^2 units were placed along this ridge, two of them located in the hog lots. Material was very light in density, and the soil in the hog lots was found to be heavily disturbed. It appears from both surface indications and test excavations that the major portion of the site had been virtually destroyed by hog activity and the building of the barn.

An extremely light historic component was uncovered in the test excavations of 21D3-124. Only a few nails, glass, and a light scatter of brick and cinder were encountered. This material was undoubtedly intrusive, coming from the nearby farmstead. Within view of the site was a house and several outbuildings. The current occupants of the farm had no information pertaining to when this building was constructed. There was no indication of a structure at this location on either the 1902 or 1920 plat map. It is assumed that this house was recently constructed and that the historic material encountered was related to the present occupation.

21D3-125

Topographic Setting: located on a 457 ft msl ridge slope bordering the south side of White Walnut Creek. Slope woodland zone.

Description: a light scatter of sandstone, glacial cobble fragments, and chert flakes found in shovel probing a field in light brush. Site area could not be defined due to poor visibility conditions, but it was estimated at approximately 2,000 m^2. No culturally diagnostic material was recovered.


MAP 26
White Walnut Creek
Site 21D3-124
Excavation Unit
Datum
Scale 1"=100'
30 meters 0
445
450
455
6
X 457
5
4
3
2
1
N
T
T
455
450

21D3-126H

Topographic Setting: located in the central portion of a short 460 ft msl ridge slope southwest of 21D3-125 on the south side of White Walnut Creek. Slope woodland zone.

Description: historic house site located in woods. Scatter included ceramics, brick, and glass, as well as the remnants of a cistern. Site size was paced to be about 2,000 m^2.

Comments/Discussion: 21D3-126H was not included in the sample of sites tested at White Walnut; the collections only contain surface materials. Representative samples of surface scatter and any potentially diagnostic material were collected during survey. Diagnostic artifacts contained in this collection were hardware, canning liners and continuous thread lids, bottles, and earthenware fragments. Upon analysis, all bottle fragments or intact bottles proved to be machine manufactured and to date post-1920. The canning liners and lids, however, indicated an earlier date. Zinc canning lids dated post-1858 and probably continued to be utilized into the 1900s (McKay 1979:46). After 1880, milk glass canning liners were used inside the zinc lids. These also were collected from the surface at 21D3-126H. The earthenware in the collections included several types. Annular banded ware dating to ca. 1830-1900, raised relief ware which was manufactured post-1850, and transfer printed ware were representative of the earthenwares collected from this site.

The 1902 plat map indicated a structure present and a road passing the site. In 1894, Walter Marlow purchased the quarter section in which the site was located, although there was no indication when a structure was actually built on the property. This research indicated that the site probably dated from around the turn of the century to the present.

21D3-127H, Marlow Homestead Site

Topographic Setting: located at the head of a secondary drainage in rolling topography at 470 ft msl. Slope woodland zone.

Comments/Discussion: Sherman Marlow, a local resident of Pinckneyville, pinpointed the location of the original Marlow homestead during an interview concerning another site. The remains of a structure were defined when the site was visited. Marlow said that the structure had been torn down some time during his youth. The house had burned; only a stone slab root cellar hidden in a clump of trees remained. This cellar was approximately 2 m by 1.5 m wide and 2 m deep. A moderate scatter of earthenware, stoneware, glass, and brick was observed in the wooded area surrounding the cellar and in an adjacent field. No diagnostic materials were found.

An historical literature search determined that Basdel Marlow built a house in the southwest corner of section 10. This was where the structure was identified. On March 19, 1855, he registered a last will and testament naming his youngest son, Bartley Marlow, as heir to the property and an on-site structure. It was Bartley Marlow's name that appeared as owner of this quarter section on the 1902 and 1920 plat maps. Although no date was located

for the actual building of this house, it is probable that it was constructed and occupied prior to 1855 and perhaps as early as 1840. If this site was the original Marlow homestead, it was one of the earliest occupation sites in the area.

Figure 12

Site 21D3-67

a. Late Archaic, Kaolin chert
b. Late Woodland-Mississippian, Kincaid chert
c. Late Woodland-Mississippian, Kincaid chert
d. Late Woodland, Cobden chert

Site 21D3-68

e. Archaic, unknown chert
f. Late Woodland, Cobden chert
g. Late Woodland, local redeposited
h. Late Woodland/Mississippian
i. Late Archaic, local redeposited chert
j. Late Archaic/Early Woodland, unknown chert

Figure 12

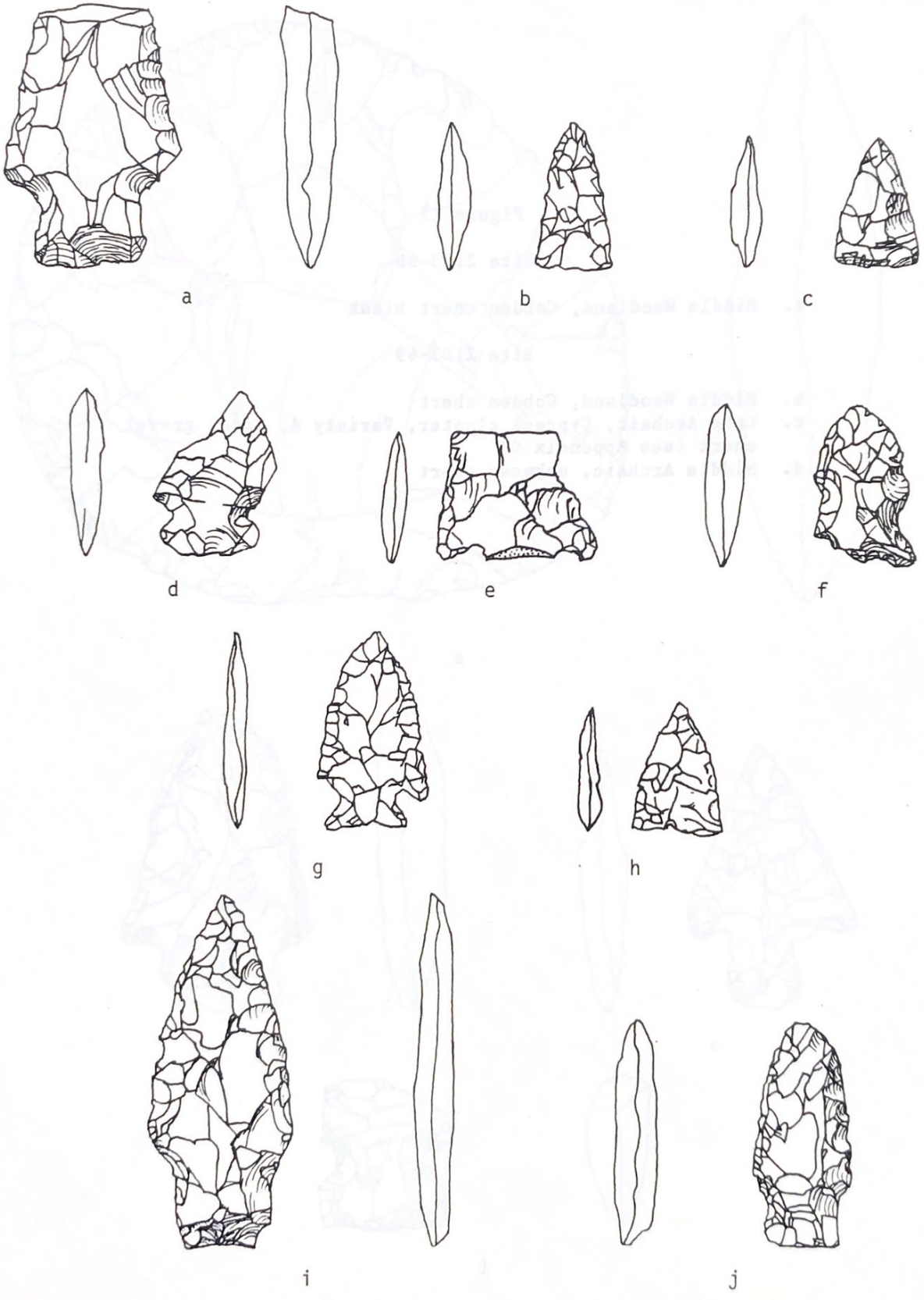


Figure 13

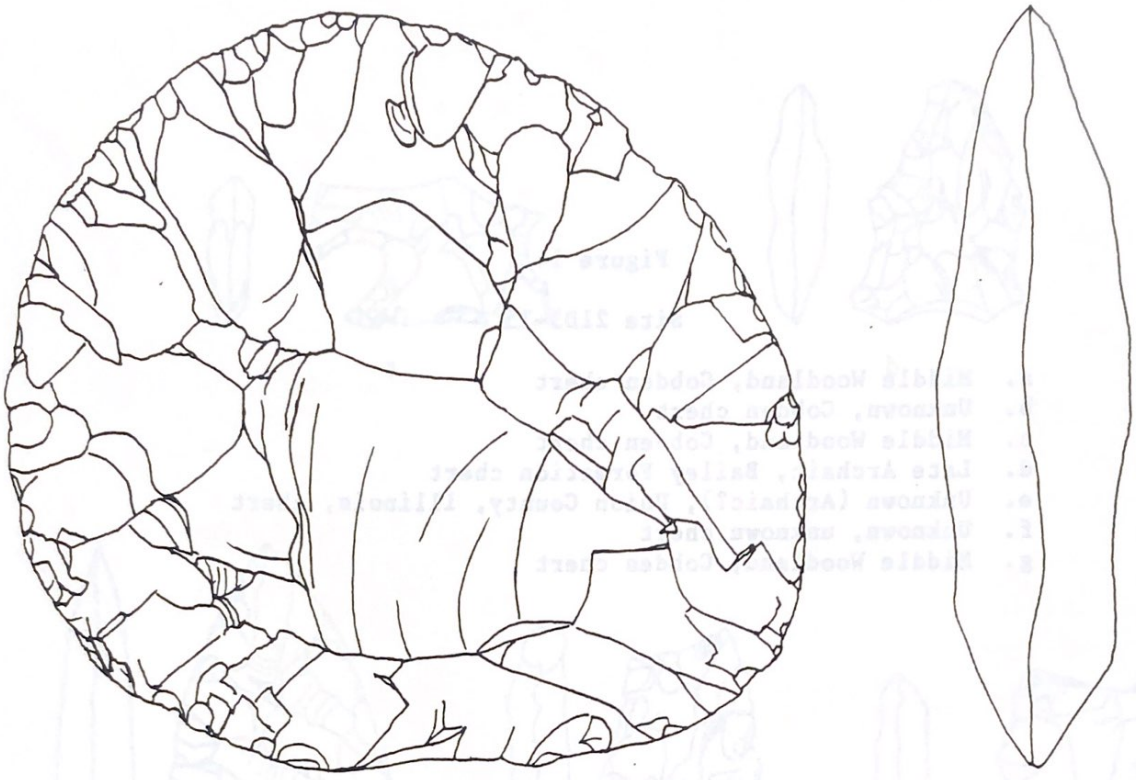
Site 21D3-68

a. Middle Woodland, Cobden chert blank

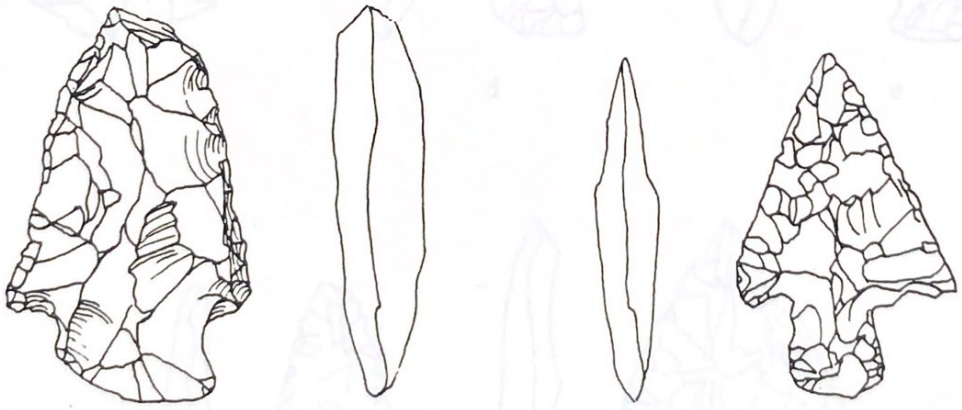
Site 21D3-69

b. Middle Woodland, Cobden chert
c. Late Archaic, Cypress cluster, Variety A, local gravel chert (see Appendix C)
d. Middle Archaic, unknown chert

Figure 13



a



b

c

d

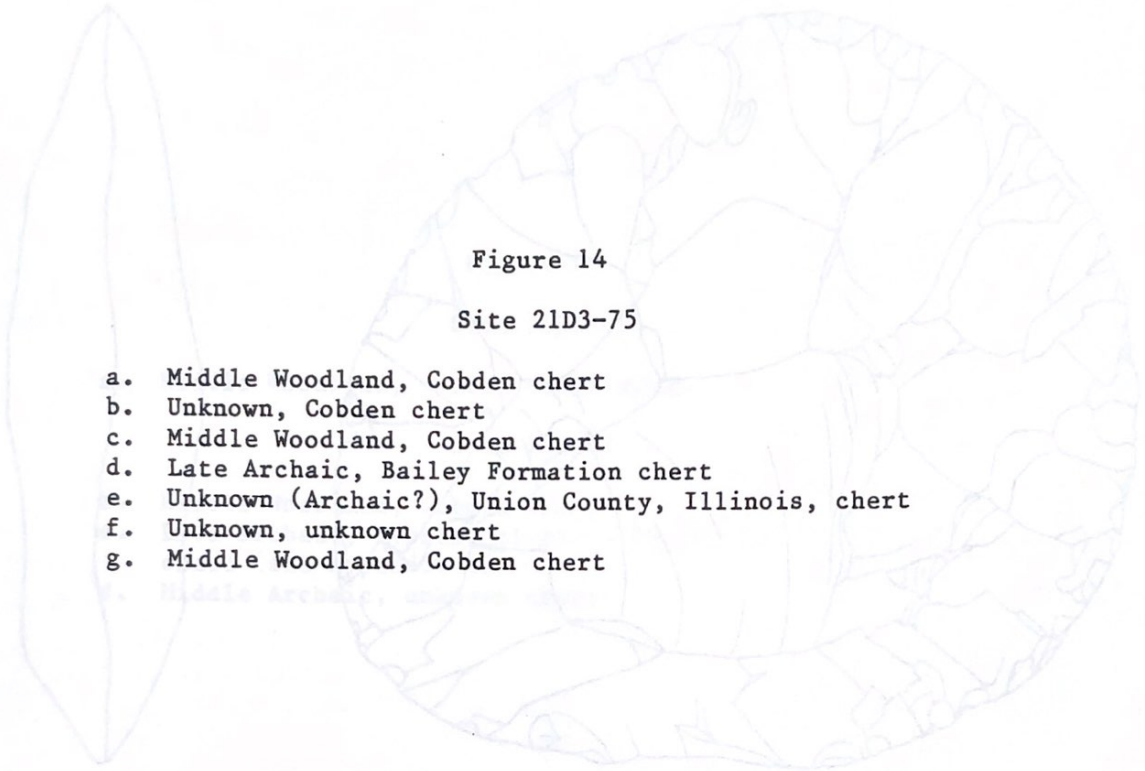


Figure 14

Site 21D3-75

a. Middle Woodland, Cobden chert
b. Unknown, Cobden chert
c. Middle Woodland, Cobden chert
d. Late Archaic, Bailey Formation chert
e. Unknown (Archaic?), Union County, Illinois, chert
f. Unknown, unknown chert
g. Middle Woodland, Cobden chert

Figure 14

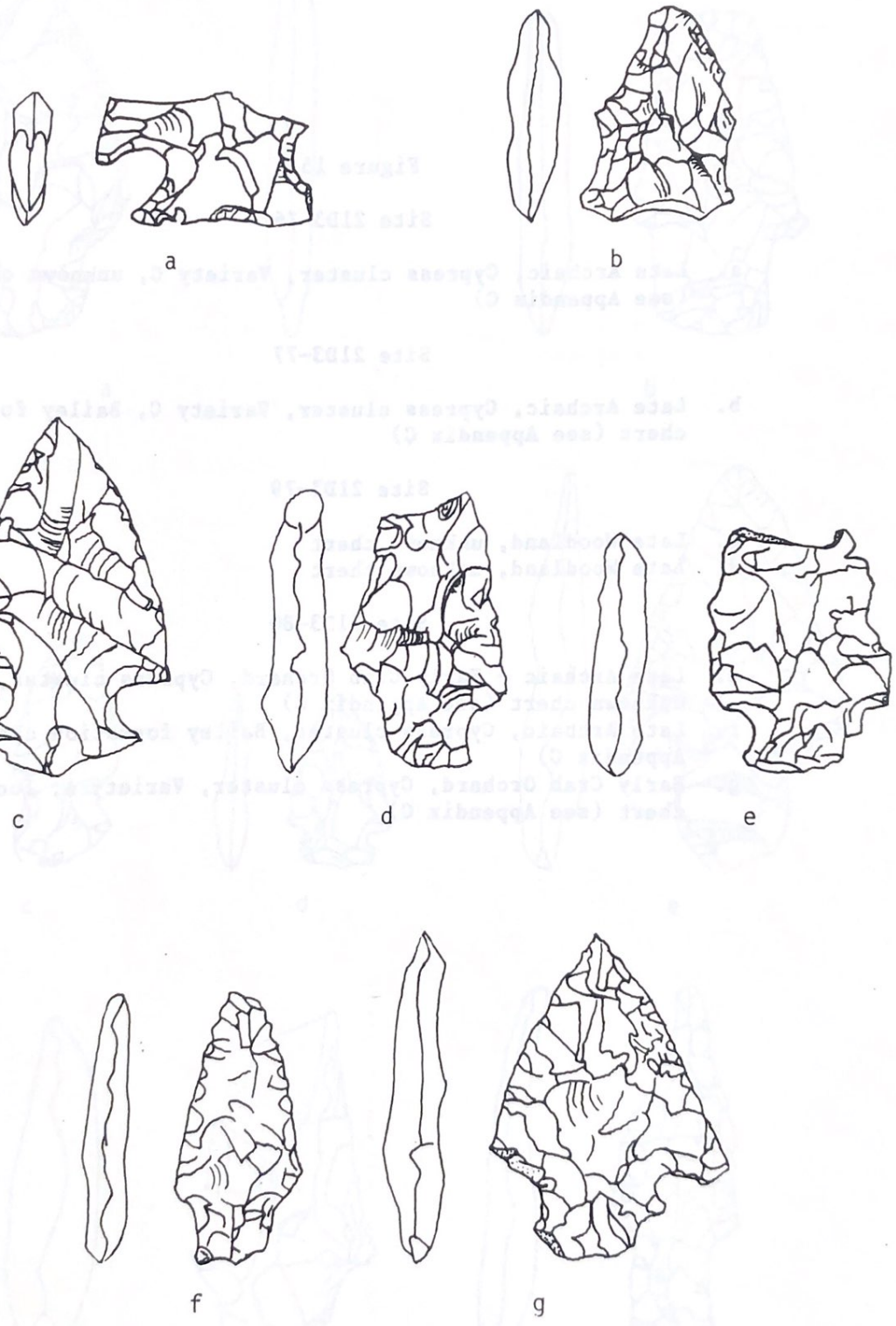


Figure 15

Site 21D3-76

a. Late Archaic, Cypress cluster, Variety C, unknown chert (see Appendix C)

Site 21D3-77

b. Late Archaic, Cypress cluster, Variety C, Bailey formation chert (see Appendix C)

Site 21D3-79

c. Late Woodland, unknown chert
d. Late Woodland, unknown chert

Site 21D3-80

e. Late Archaic - Early Crab Orchard, Cypress cluster, Variety B, unknown chert (see Appendix C)
f. Late Archaic, Cypress cluster, Bailey formation chert (see Appendix C)
g. Early Crab Orchard, Cypress cluster, Variety A, local gravel chert (see Appendix C)

Figure 15

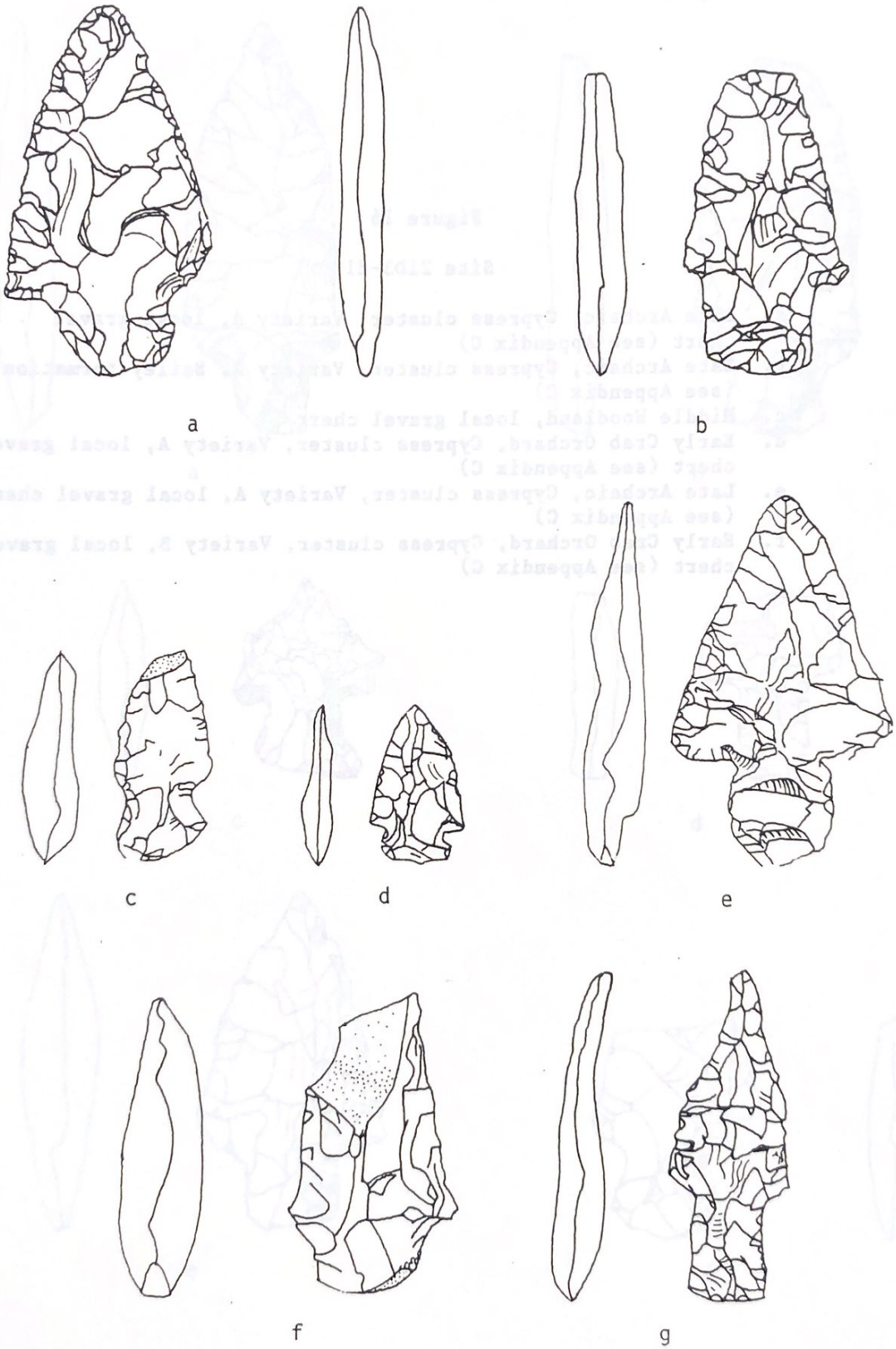


Figure 16

Site 21D3-81

a. Late Archaic, Cypress cluster, Variety A, local gravel chert (see Appendix C)
b. Late Archaic, Cypress cluster, Variety A, Bailey formation (see Appendix C)
c. Middle Woodland, local gravel chert
d. Early Crab Orchard, Cypress cluster, Variety A, local gravel chert (see Appendix C)
e. Late Archaic, Cypress cluster, Variety A, local gravel chert (see Appendix C)
f. Early Crab Orchard, Cypress cluster, Variety B, local gravel chert (see Appendix C)

Figure 16

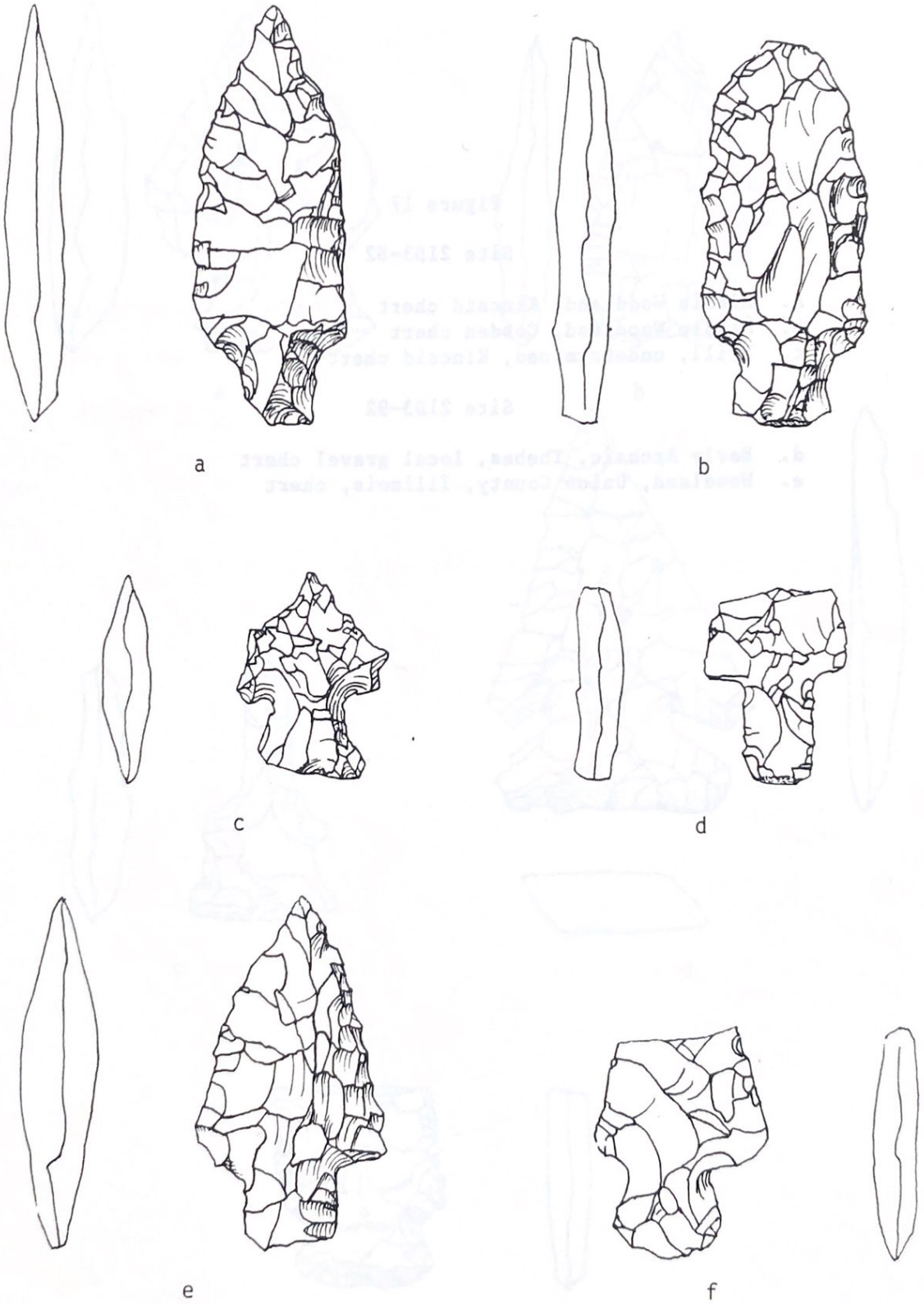


Figure 17

Site 21D3-82

a. Middle Woodland, Kincaid chert
b. Middle Woodland, Cobden chert
c. Drill, undetermined, Kincaid chert

Site 21D3-92

d. Early Archaic, Thebes, local gravel chert
e. Woodland, Union County, Illinois, chert

Figure 17

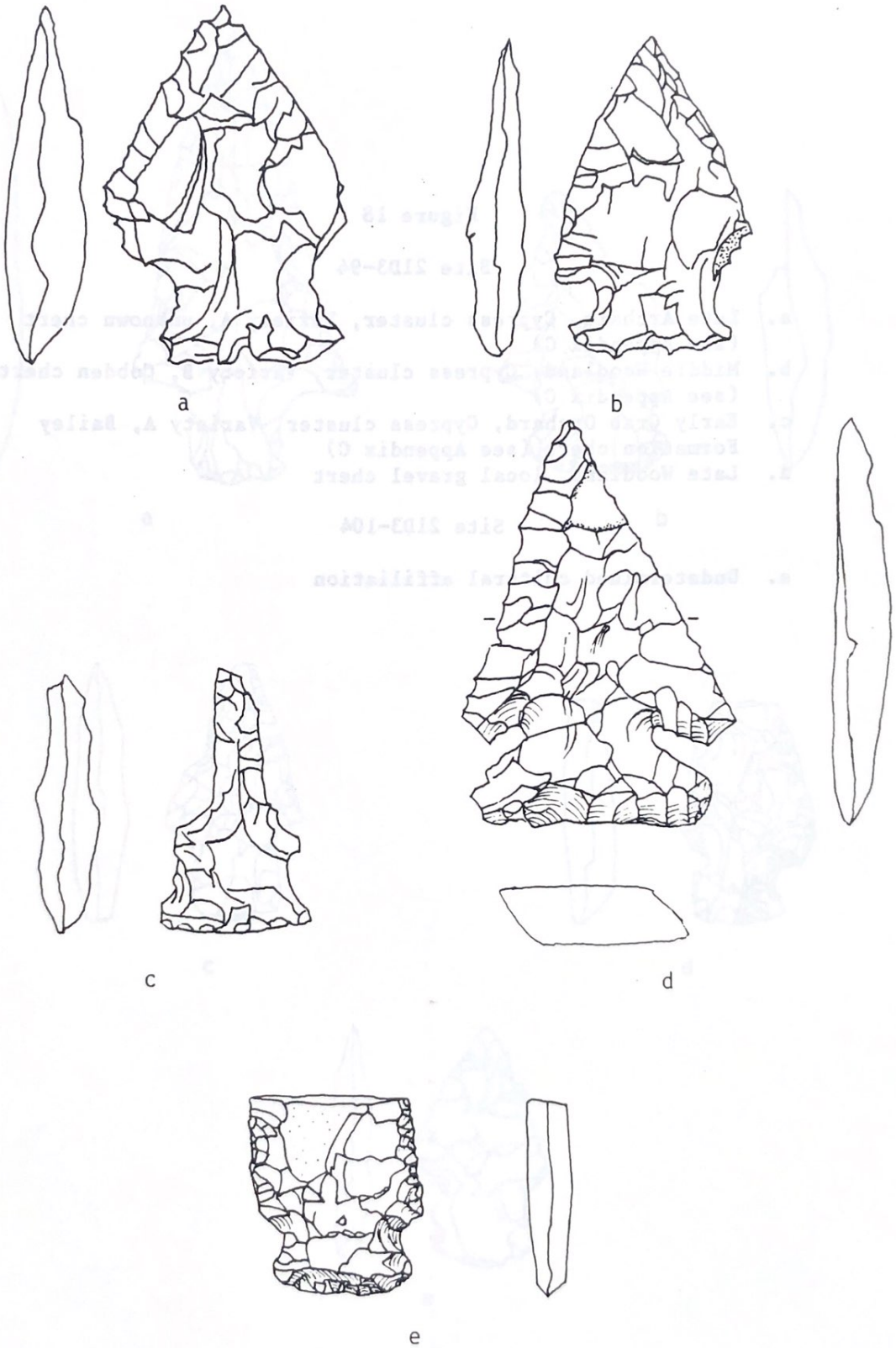


Figure 18

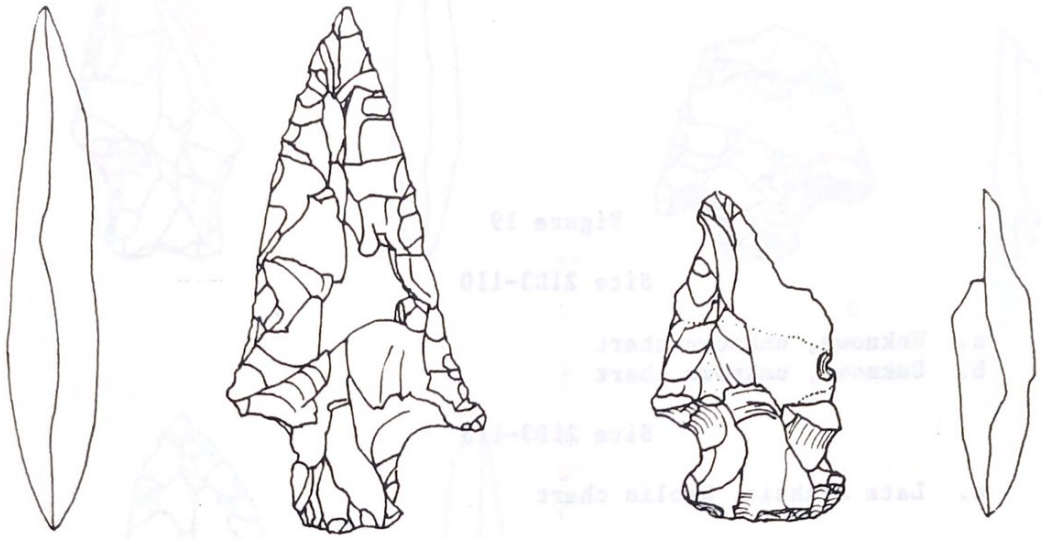
Site 21D3-94

a. Late Archaic, Cypress cluster, Variety A, unknown chert (see Appendix C)
b. Middle Woodland, Cypress cluster, Variety B, Cobden chert (see Appendix C)
c. Early Crab Orchard, Cypress cluster, Variety A, Bailey Formation chert (see Appendix C)
d. Late Woodland, local gravel chert

Site 21D3-104

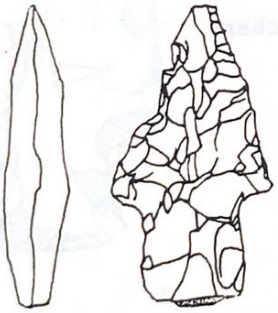
e. Undetermined cultural affiliation

Figure 18



a

b



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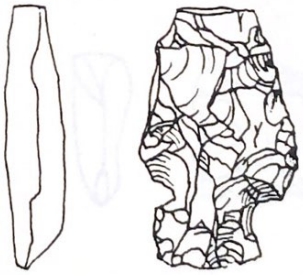

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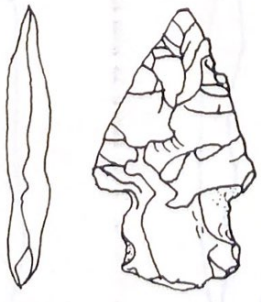


e

Figure 19

Site 21D3-110

a. Unknown, unknown chert
b. Unknown, unknown chert

Site 21D3-113

c. Late Archaic, Kaolin chert

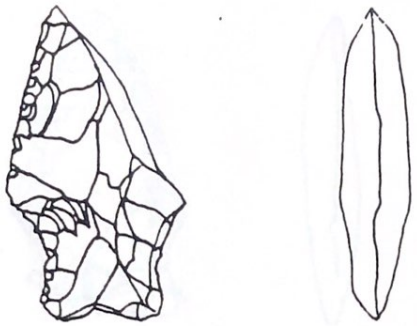
Site 21D3-114

d. Undetermined, local gravel chert
e. Middle Woodland, Bailey formation chert

Site 21D3-115

f. Early Archaic, Dovetail, Kinkaid chert

Figure 19



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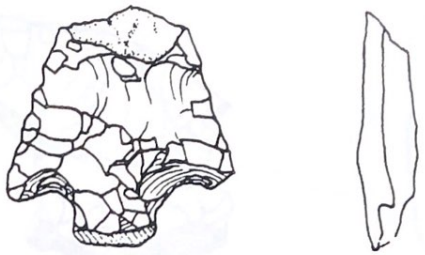

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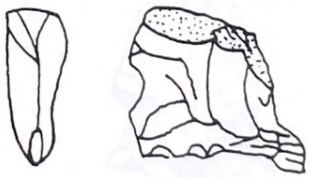

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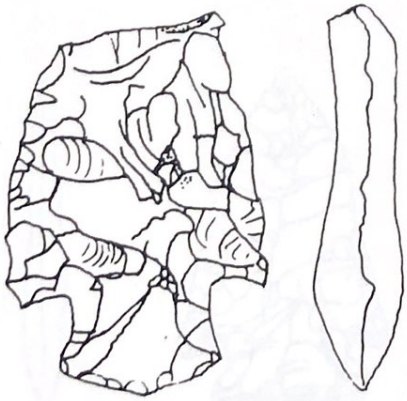

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f

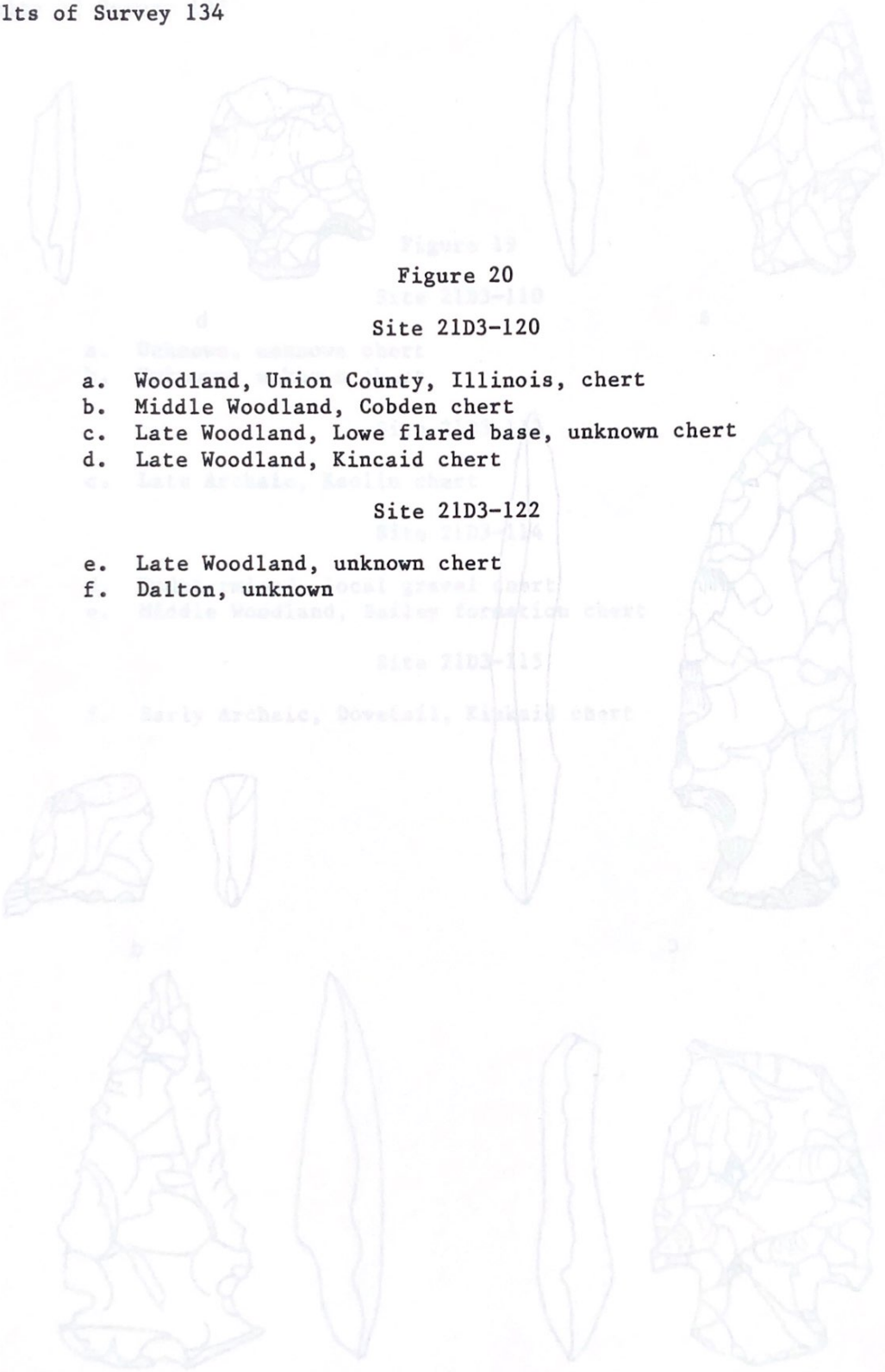


Figure 20

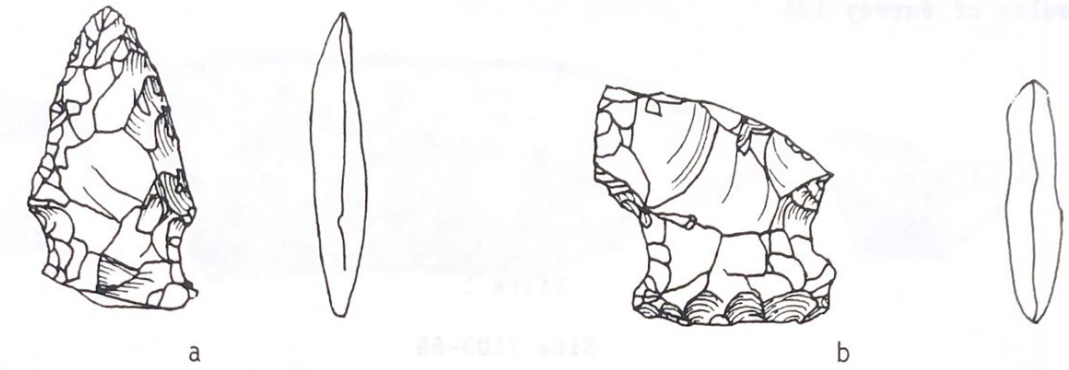
Site 21D3-120

a. Woodland, Union County, Illinois, chert
b. Middle Woodland, Cobden chert
c. Late Woodland, Lowe flared base, unknown chert
d. Late Woodland, Kincaid chert

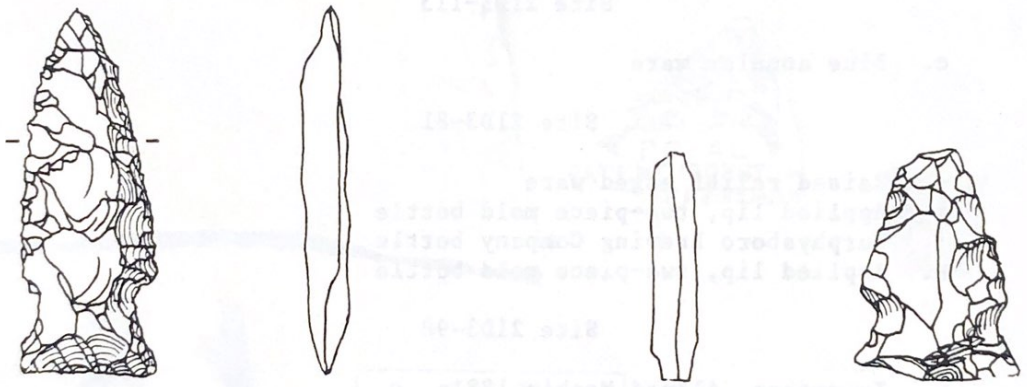
Site 21D3-122

e. Late Woodland, unknown chert
f. Dalton, unknown

Figure 20



a b



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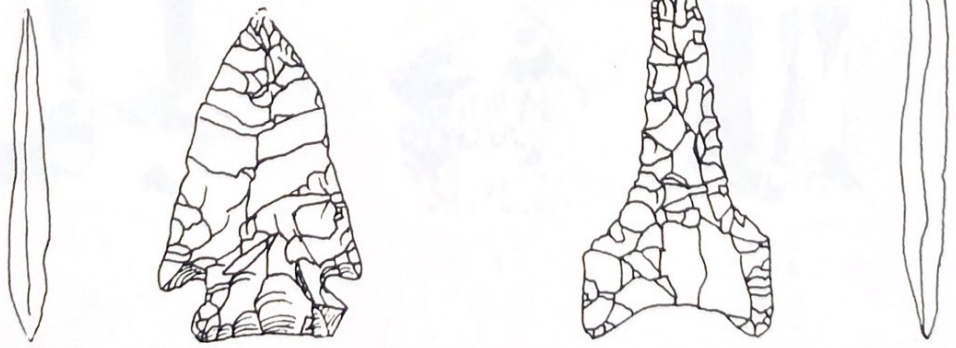


e f

Results of Survey 136

Plate 1

Site 21D3-68

a. Blue shell edged ware
f. Partial maker's mark, unidentified
g. Partial maker's mark, ironstone
h. Gunflint

Site 21D3-121H

b. Multicolor transfer printed ware

Site 21D3-113

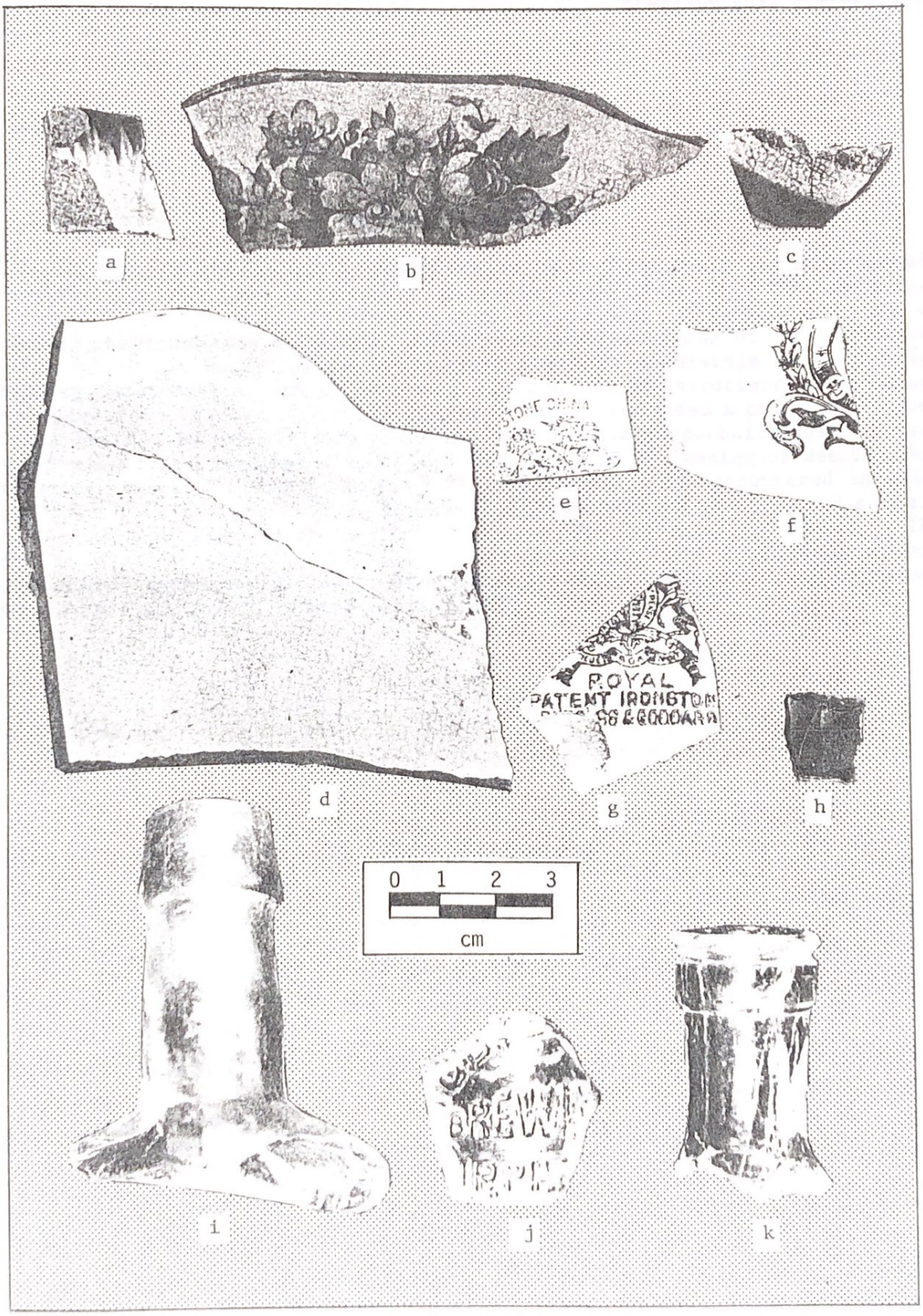
c. Blue annular ware

Site 21D3-81

d. Raised relief edged ware
i. Applied lip, two-piece mold bottle
j. Murphysboro Brewing Company bottle
k. Applied lip, two-piece mold bottle

Site 21D3-98

e. Ironstone, Alfred Meakin 1881+


a
b
c
d
e
f
g
h
i
j
k
ROYAL
0 1 2 3
cm

ARCHITECTURAL FEATURES

Very few standing structures were encountered within the mine permit boundaries at the time of survey. Besides historic site 21D3-121, only five other sites with extant structures were identified. However, only two of these were currently occupied. Extant structures at one of the occupied sites (northeast corner of Sec 9) included a modern ranch-style house of brick masonry construction with an adjacent old barn. Extant structures at a second occupied site (southeast of the center of Sec 4) included a two-story, wood frame house with asphalt siding and several associated outbuildings. A two-story wood frame unoccupied house was identified in the center of Sec 9. This structure has since been destroyed. The other structures encountered included two farm utility buildings in the northwestern portion of Sec 3 and a small isolated hunting shack in the southwestern portion of Sec 3. The architectural features identified above are standard architectural and structural types and are of no known historical significance. They do not meet the eligibility criteria for nomination to the NRHP.

RESEARCH EVALUATION

Based on the results of archaeological investigations in the White Walnut Creek area, research questions and hypotheses outlined in the Research Design section were evaluated. The following is a discussion of results.

Question 1: Expected site densities within the White Walnut Creek research area will vary from 5 to 8 sites/mi^2 (2 to 3 sites/km^2).

Discussion: Observed site frequency was 14.8/mi^2 (5.8/km^2). If only aboriginal sites are considered (Table 5), site frequency amounts to 13.6/mi^2 (5.3/km^2). Site frequency data were derived for each environmental zone in the area (Table 5).

Williams and Woods' (1978) predictive model for the Big Muddy River Basin examined four study areas concerning relationships between environmental zones and site location. Sites occurred more frequently in an alluvial/upland border setting than in either one of these environments alone (Williams and Woods 1978:33). Williams and Woods' alluvial/upland border zone can be equated with the slope woodland zone at White Walnut. Their alluvial and interior upland zones coincide with the bottomland forest and post oak flats zones, respectively.

Table 5

Environmental Zones and Aboriginal Site Locations
Burning Star #2, Deep Strip #3, Perry County, Illinois

Environmental Zone	Approximate Area	% of Total Area	Number of Sites in Zone	% of Total Sites	Site Frequency
Bottomland Forest	.8 mi^2 2.1 km^2	20	0	0.0	0/mi^2 0/km^2
Slope Woodland	2.1 mi^2 5.4 km^2	51	44	78.6	21/mi^2 8.1/km^2
Post Oak Flats and Intermediate (Slope Woodland/POF)	1.2 mi^2 3.1 km^2	29	12	21.4	10/mi^2 3.9/km^2
TOTALS	4.1 mi^2 10.6 km^2	100	56	100.0	13.6/mi^2 5.3/km^2

Data from the White Walnut Creek area supported the conclusions of Williams and Woods' model (Table 6). Site densities were highest in an alluvial/upland "transition" setting -- roughly comparable to a slope woodland zone. The post oak flats yielded the next high density of sites. Also noted was the relative absence of sites in a narrow floodplain situation (Williams and Woods 1978:34), a setting very much describing the bottomlands of White Walnut Creek in which no sites were found. Seasonal flooding and generally wet conditions are possible reasons for the lack of habitation in this area.

Table 6
Cultural Affiliation and Environmental Zones
Burning Star #2, Deep Strip #3, Perry County, Illinois

Cultural Affiliation	Bottomland Forest	Slope Woodland	Post Oak Flats	Totals
Undetermined Prehistoric	0	19	8	27
Archaic	0	1	3	4
Woodland	0	10	0	10
Archaic/Woodland	0	12	1	13
Woodland/Mississippian	0	2	0	2
Totals	0	44	12	56

Question 2: Site function, i.e., activities, will vary between environmental zones and can be measured by the diversity of tool assemblages and subsistence data.

Discussion: Conclusions regarding site function within the White Walnut Creek study area were derived from analyses of excavation materials. Data were expressed as average density figures reflecting the types and numbers of artifacts present per excavation unit (Table 7). Such density figures were employed as a means of standardizing the data to make intra- and intersite comparisons more easily interpreted. Surface collection materials were omitted for comparison purposes as a means of controlling for sampling bias in the discussions. Subsurface materials also were more comparable since all units were excavated in a consistent fashion.

A close examination of these data revealed several significant observations concerning site functions. Overall, densities of waste chert at sites in the White Walnut Creek area were very low. This situation contrasted sharply with certain sites in the Cedar Creek area, in which lithic debris was the dominant cultural material class, and the inferred site function was flint knapping (McNerney 1975:410). In addition to the low density of lithic debris in the White Walnut Creek area, all lithic debitage was of a relatively small size. Of the flake and shatter categories, only 2% of the debitage was over

Table 7

Average Densities of Prehistoric Cultural Material per Excavation Unit
Burning Star #2, Deep Strip #3, Perry County, Illinois

Site No. 21D3-	No. Units Tested	Bifacial Tools	Unifacial Tools	Lithic Debris	Ceramics	Mod Rock	Unmod Rock	Floral/ Faunal
				SLOPE WOODLAND				
67	12	1.25	2.33	29.00	29.50	1.08	243.20	4.00
68	30	.23	.40	10.00	14.50	0.00	89.70	0.00
70	8	1.00	1.80	23.80	.60	.25	230.80	2.90
76	6	.17	.17	7.20	7.20	0.00	76.20	0.00
77	5	.40	1.20	7.00	3.80	0.00	75.40	0.00
78	14	0.00	.07	.86	0.00	0.00	8.86	0.00
81	13	.38	.38	5.00	.15	0.00	55.20	0.00
88	17	.06	.47	3.82	0.00	.06	15.40	0.00
91	6	.17	.50	8.50	.33	0.00	88.80	0.00
92	9	.22	.55	9.00	1.11	0.00	87.70	0.00
93	8	0.00	0.00	3.40	0.00	0.00	75.40	0.00
94	7	0.00	1.86	15.70	3.86	.43	111.30	1.14
95	5	0.00	.20	5.40	0.00	0.00	31.80	0.00

Table 7 (cont'd)

Site No. 21D3-	No. Units Tested	Bifacial Tools	Unifacial Tools	Lithic Debris	Ceramics	Mod Rock	Unmod Rock	Floral/ Faunal
99	10	.30	.10	7.90	.20	.20	61.00	0.00
102	5	0.00	.20	1.00	0.00	0.00	32.80	0.00
110	8	.25	.75	5.60	5.80	0.00	50.00	0.00
112	5	.20	0.00	1.20	0.00	0.00	15.40	0.00
120	14	.14	.64	3.00	2.00	.07	15.80	0.00
122	6	.33	3.33	36.00	35.60	1.67	451.70	6.00
				POST OAK FLATS				
69	10	.20	.40	8.60	.10	.20	97.70	0.00
71	5	0.00	0.00	.80	0.00	0.00	80.80	0.00
97	7	0.00	.43	2.70	0.00	.14	59.10	0.00
101	8	0.00	0.00	.38	0.00	0.00	29.90	0.00
107	15	0.00	0.00	.73	.12	0.00	33.40	0.00
113	8	0.00	.13	.88	0.00	.13	267.60*	0.00
124	6	0.00	0.00	2.80	0.00	0.00	30.8	0.00

* Includes material of probable historic origin

1 in in length, while 79% was between 1/2 and 1/4 in long. The paucity of this material class in the White Walnut Creek area indicated that tool manufacturing was not a primary activity. The low densities and small size of lithic debris at the majority of the sites were suggestive of tool maintenance activities and relative absence of quality chert resources.

With the exception of sites 21D3-67 and 21D3-122, material densities from all sites were relatively low, especially in the various tool categories and in ceramics, where applicable. These densities and the shallow stratigraphic nature of cultural deposits at these sites suggested short-term occupations.

The four sites in the area which were found to contain subsistence and/or feature data (21D3-67, -70, -94, and -122) also had the highest densities of unifacial tools, lithic debris, and both modified and unmodified rock. This would suggest either longer occupations or, more likely, repeated occupations over a period of time at these sites. Another alternative would be that these sites represented occupations of larger, perhaps more complex, social groups.

The two sites in the area with the highest artifact densities across classes of cultural material, 21D3-67 and 21D3-122, were also the only two sites which had not been cultivated. While this situation may be only coincidental, there no doubt exists a relationship between the scattering and erosional effects of agricultural practices and site integrity, not to mention the improved atmosphere for collecting activities which clearing and cultivation provide.

These two sites compared favorably to one another in their densities of material. While densities appeared higher at 21D3-122, this may be the result of the site's location on a high knob with a restricted area for habitation, resulting in the spatial restriction of artifact distribution.

In regard to differences in densities of cultural material between sites located in the slope woodland zone and in the post oak flats zone (Table 7, Figure 21), variation occurred within both zones, and sites located in post oak flats were more likely to contain low densities of cultural material. The observation of lower densities of cultural material at sites in post oak flats, combined with the low site frequencies in this zone, indicated that the post oak flats zone was neither extensively nor intensively exploited in prehistoric times (Figure 21).

Initial observations pointed to rather limited tool assemblages, particularly in the bifacially-worked tool classes. A restricted tool assemblage is suggestive of a specific function or activity occurring at a site, as opposed to a diverse assemblage indicative of a variety of activities taking place. The limited data recovered from 21D3-67 and 21D3-122 suggested similar functions to the other smaller sites, although these two apparently were occupied more intensively. The sites in the White Walnut Creek area appeared to represent short-term specific activity occupations, albeit the small data sample leaves such a statement open to question.

Similar activities appeared to be represented in both the slope woodland and post oak flats area. The intensity of activity appeared more sporadic in the post oak flats. If ceramic debris is indicative of sedentary or domestic

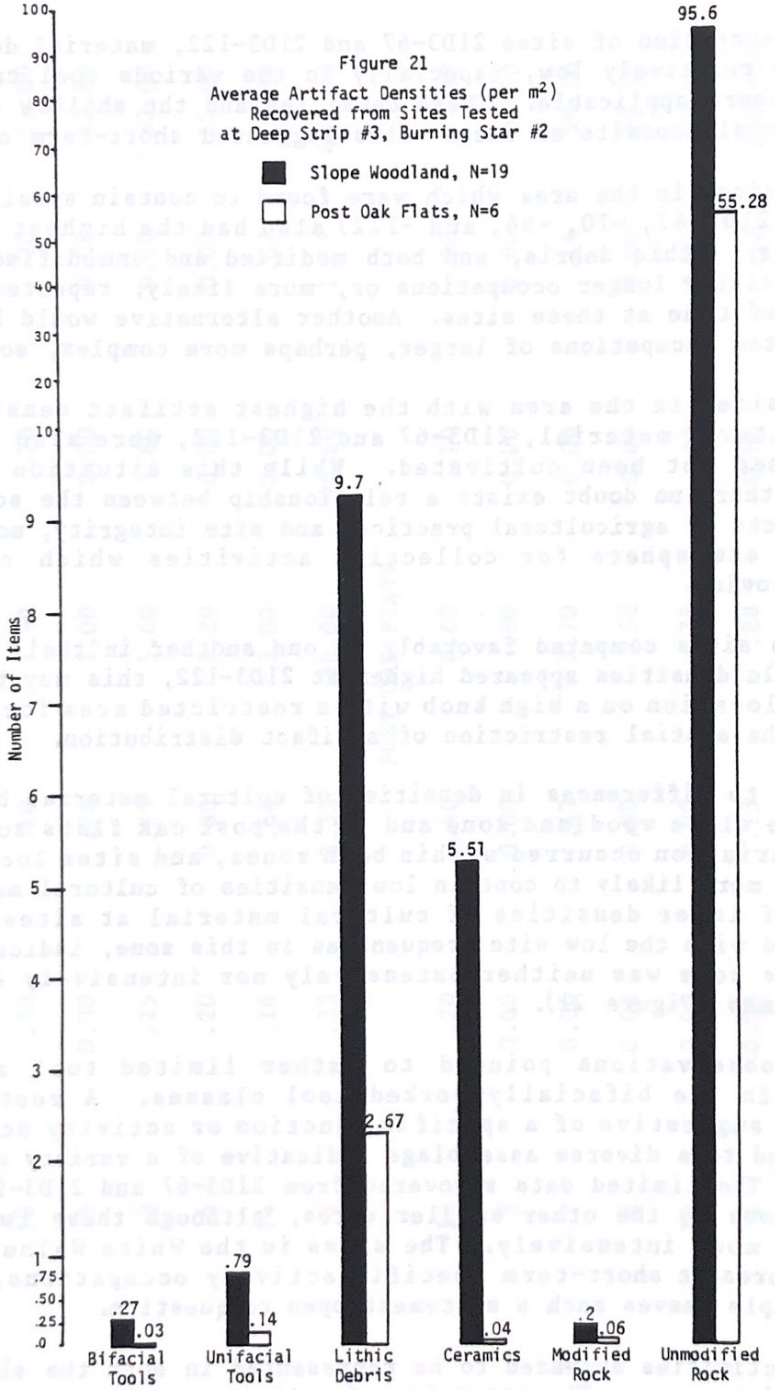


Figure 21
Average Artifact Densities (per m²)
Recovered from Sites Tested
at Deep Strip #3, Burning Star #2
Slope Woodland, N=19
Post Oak Flats, N=6
Number of Items
100
90
80
70
60
50
40
30
20
10
9
8
7
6
5
4
3
2
1
.75
.50
.25
.0
.27
.03
.79
.14
9.7
2.67
5.51
.04
.2
.06
95.6
55.28
.74
.0
Bifacial Tools
Unifacial Tools
Lithic Debris
Ceramics
Modified Rock
Unmodified Rock
Floral/ Faunal

activities, then such activities are not indicated for sites in the post oak flats.

Question 3: Small intrasite activity areas in upland settings will not contain subsurface features.

Discussion: No subsurface features were recovered at small, upland site locations. Such sites, as evidenced by light scatters and relatively low tool-type diversity, suggested that they were short term, limited activity sites. These findings were consistent with expected patterns of limited resource exploitation inferred from the nature of resources available for potential utilization by aboriginal social groups. The prehistoric environment, being dominated by an oak-hickory forest region, would suggest autumn exploitation of nuts and acorns; the lack of features associated with storage or seasonal occupations indicated that such resources, if exploited, may have been removed to other locales.

Question 4: Reexamination of present Cypress projectile points/knives typology.

Discussion: Results of this analysis are presented in Appendix C.

SUMMARY AND CONCLUSIONS

A total of 61 sites was found in the area in and around Deep Strip No. 3 (Table 4). Fifty-six prehistoric components and 18 historic components were represented. A brief chronological breakdown of the various cultural manifestations represented in this area follows.

Prehistoric

A single Dalton period projectile point represented the earliest human activity in the White Walnut Creek area. Since this artifact was a surface find from a multicomponent site, little can be said about Dalton period use of the study area other than to note its presence. Based upon the current views of Dalton culture representing a shift from a nomadic hunter to a seminomadic hunter-gatherer subsistence base, it can be assumed that this component represented a limited activity locus of short-term duration.

The Early Archaic occupations were indicated by one Thebes point and one St. Charles point. Since one of these was an isolated find and the other a surface find at a multicomponent site, it is difficult to assess the nature of occupations from this time period. As with the earlier Dalton presence, it is likely that these Early Archaic sites represented short-term transient habitations.

The Middle Archaic was represented by only one side-notched point. Since this was found on the surface, nothing can be said concerning the nature of Middle Archaic here except to note its presence.

The number of Late Archaic components recorded indicated an intensification of prehistoric resource exploitation in the study area. Eleven sites in the White Walnut Creek area yielded Late Archaic material. This pattern fits the general configuration for the Late Archaic in southern Illinois, characterized by population growth and a possible increase in plant resource exploitation in several environmental zones. These cultural processes were difficult to identify due to both the persistence and blending of tool types (Cypress cluster; Appendix C), the lack of good subsistence data, and the lack of datable features at most terminal Late Archaic, Early Woodland, or early Middle Woodland sites in this region.

Seven sites in the area contained Middle Woodland components. Two phases seemed to be represented here: an early phase, marked by the presence of points with long, narrow stems, similar to those recovered from early Middle Woodland Crab Orchard sites (Appendix C), and a later period, marked by varieties of well made corner-notched points (Plate 1). No material was recovered from the study area which would indicate participation in the Hopewellian Interaction Sphere. The presence of a large Cobden blank at site

21D3-68, similar to those recovered from Middle Woodland Crab Orchard sites in the Shawnee Hills (McNerney 1975), indicated some sort of interaction between the Cobden source area and White Walnut Creek.

Late Woodland sites in the White Walnut Creek region gave the appearance of having been more intensively occupied than sites dated to previous periods. The two sites which had the highest densities of material (21D3-67, -122) also contained sizable Late Woodland components. This suggested either a more intensive exploitation of this area during this time, movements of larger social groups, longer durations of occupation, or perhaps some combination of these factors. Seasonal indicators from the above sites pointed to a fall occupation, albeit this evidence was scant. Eleven sites contained Late Woodland material.

Mississippian occupations were not common in the White Walnut Creek area, with only two components being identified. This was not surprising since Mississippian culture is noted for a settlement-subsistence pattern involving centrally located population centers in large floodplains surrounded by a radiating pattern of agricultural and special purpose sites. Prior surveys in the upland regions of southern Illinois (Powell et al. 1982b; Van Hoy 1980) also indicated either an absence of Mississippian sites or short duration occupations evidenced by very light artifact scatters.

Summary of Prehistoric Investigations

Based on surface examination and test excavations, prehistoric activities in the White Walnut Creek study area may be characterized as follows:

1. The area was dominated by the slope woodland zone, which comprised over 50% of the total area surveyed. Being dominated by oaks and hickories, this zone's resources were generally seasonal in nature. The acorns and nuts would be available only in the autumn, and white-tailed deer would be seasonally concentrated in the area of these resources at this same time.

2. Although the overall aboriginal site frequency of 13.6/mi2 (5.3/km2) suggested a heavy prehistoric occupation of the White Walnut Creek area, the sites were generally small in size; and the low densities and diversities of cultural materials indicated short-term, limited activity occupations.

3. Site density was highest in the slope woodland zone (21/mi2; 8.1/km2), with over 78% of all aboriginal sites located therein.

4. The tool assemblages at all sites were rather restricted, i.e., there was an absence of some traditional tool categories such as celts, digging implements, and adzs. However, a number of polished flakes (Appendix A) indicated that bifacial digging implements and/or adzes were used in the area.

5. While a detailed quantitative analysis of chert types present at sites in the area has yet to be completed, types so far

identified included Cobden, Kinkaid, Kaolin, Mill Creek, an unnamed tan chert from the Bailey Limestone formation (Union County, Illinois), and local chert gravel. The presence of nonlocal cherts in the White Walnut Creek area indicated some form of contact with areas containing these resources, either by direct movements of people or through trade.

6. The presence of charred nutshell in the features at 21D3-70 and 21D3-94 and in the middens of 21D3-67 and 21D3-122 would suggest fall occupations at these sites. Although this evidence was scant, it was significant that the only four sites from which there was subsistence information pointed to a fall occupation.

From these observations, a hypothesis may be developed for future work in the area. This hypothesis is: that the majority of sites in the White Walnut Creek region (at least those with Woodland and Mississippian affiliations) represents seasonal movements into the area in the autumn months for the specific purpose of exploiting the resources available from the oak-hickory dominated slope woodland zone.

The underlying assumption in this hypothesis was that the subsistence-settlement patterns of this area through time represented a part of larger subsistence-settlement systems. This seemed a valid assumption given the fact that no site in the area had been identified as a base camp or village. Since no research has been conducted in the nearby Beaucoup Creek area, the nature of settlement patterns there and how they relate to the White Walnut Creek area remains unknown. An extensive survey of Beaucoup Creek is needed before any meaningful statements can be made regarding prehistoric settlement patterning in a small, isolated tributary such as White Walnut Creek. However, it is probable that mitigation work at selected sites in Deep Strip No. 3 and similar investigations at the Northfield along Galum Creek will add considerable insight into these and related problems.

Historic

Eighteen historic components were identified in the project area. Historic occupation sites were defined on the basis of three criteria: (1) before actual field reconnaissance was undertaken, early plat maps and atlases were consulted for homestead locations; (2) site collections were examined for evidence of site function and temporal range of occupation. Construction materials such as brick, metal, nails, and glass were considered indicative of structures and, consequently, occupation; and (3) an arbitrary 50-year-old rule for historic sites was employed. Historic sites were recorded when diagnostic artifacts indicated a pre-1920 to 1930 occupation.

In the final analysis of the collections, 12 of the 18 components were determined to represent homestead sites. Another four components appeared to be limited activity areas associated with nearby homesteads, representing the remains of outbuildings, trash dumps, or agriculturally related activity areas. Two locations (21D3-78 and 21D3-99, Map 5) of historic artifacts could not be assigned a specific site function. Recent trash dumping activity was

noted frequently throughout the area and was considered a possible source of the undefined historic components.

In addition to identifying historic components that were archaeologically unique, it was also important to examine early settlement patterns within the general area. The juxtaposition of historic and prehistoric components indicated similar settlement preferences. In the White Walnut drainage, there were 12 instances of prehistoric/historic sites occupying a single physiographic feature. In both instances, sites were located in the slope woodland zones. Bottomlands, immediately adjacent, appeared to have been deemed unsuitable for habitation because of periodic inundation.

Archaeological evidence and historic documentation indicated that most of the homestead sites delineated in this survey were settled around the turn of the century, ca. 1880-1920. These data date most of the sites to the Early Agricultural period (1850 to 1900). As the literature search demonstrated, much of the property in this area was not purchased until this late date.

Three sites, 21D3-68, 21D3-113, and 21D3-127H, have been assigned tentatively to the mid-1800s or a transitional interval for the Pioneer and Early Agricultural periods (1780-1850, 1850-1900). Historical assemblages examined for these three sites supported an early occupation date. The property on which 21D3-113 is situated was purchased in 1840 by Margaret Abernathy; site 21D3-68 was located in Sec 4 which was sold to Thomas Metcalf in 1853. The original Marlow homestead, 21D3-127H, was identified by a family member, Sherman Marlow. This structure had been constructed by at least 1855 (Map 5).

Other associations of historic homesteads with early purchase dates were not detected archaeologically. The White Walnut Creek area was sparsely settled until the late nineteenth century. Many early and mid-nineteenth century structures and their locations may have been destroyed in order to erect one or more newer structures, the latest of which may be standing today. If the original structure was made of logs, there would be little brick, rock, or metal remains to indicate a structure once occupied the location. The location may appear as scatter of historic artifacts with little or no construction materials. Thus, early homesteads may be difficult to locate because of the small amount of material present on the site or the obliteration of the earlier site by later construction. The early artifacts may be mixed with those of a later date and appear as a small percentage of the total collection.

A review of the early settlement of Pinckneyville and the surrounding area indicated that Euro-American settlers preferred wooded areas over adjacent prairie isolates (McDonough 1883:83). Due to a heavy grass cover, these isolates were not suitable for agriculture by conventional methods, although they were ideal for grazing draft animals (Gates 1960:180). The advent of sturdy plows in the mid-1800s enabled farmers to work the prairies. In 1883, these open expanses of grasslands occupied approximtely 25% of the total land incorporated in Perry county (Denny 1972:34). The land within the survey area included no former prairies; however, Upper Holt's Prairie (Map 5), is located on the eastern border. The lower floodplain, or bottomlands, could not be utilized agriculturally until technological advancement produced

the proper tools and drainage methods. The bottomlands were potentially good cropland, as the soils consisted of rich gray silty loam. These soils characteristically absorb and retain moisture for greater periods of time than upland soils (Denny 1972:45). They were flooded annually in early spring, leaving the more poorly drained areas in swamp.

A review of the sites identified on White Walnut Creek suggested that houses were generally constructed on elevated ridges above drainages (Table 4, Map 5). Selection of suitable locations for settlement within the project area appeared to be dictated by several considerations. Communication, reliable transportation, and environmental restrictions were among the most important. The original U. S. government survey of the area parceled land into sections and quarter sections. These arbitrary boundaries were reflected in the placement of roads, farm lanes, and homesteads.

Since the surrounding lands of Perry County had been settled prior to the uplands of the White Walnut drainage, established roads and trails transected the area. It was on these routes that the earliest homes were built. Communication and transportation flowed more readily along these paths as a result of continual use. Observations based on plat maps and field reconnaissance noted clustering of homesteads of related and unrelated families. The implication is that the selection of a suitable location for occupation also was predicated partly on social considerations.

EVALUATION AND RECOMMENDATIONS

Results of the Investigations

The archaeological investigations in the White Walnut Creek area have resulted in the location, identification, and discussion of 61 archaeological sites and/or cultural remains dating as early as ca. 8000-7000 B.C. to the present. Of this total, 18, or 29.5%, had a Euro-American occupation; and the remaining 43, or 70.5%, had only a prehistoric component. Test excavations were carried out at 26 prehistoric sites, 42.6% of the total.

With few exceptions, the prehistoric occupations in the White Walnut Creek area were characterized by light to moderate amounts of cultural material, absence of organic staining, little cultural deposition or depth, and small area (average size 3,748.5 m^2). As such, it was not surprising that cultural affiliation could only be determined for 34 (56%) of the sites. Only five of the sites tested produced subplow zone features.

Evaluation of Phase I Objectives and Methods

The three primary objectives, to locate, to assess, and to complete Phase I work, were achieved within the anticipated 12 months. Further, a representative sample of 26 sites in the two major environmental zones were evaluated.

Three hypotheses were generated for initial testing and included questions regarding site densities, subsurface features on upland sites, and the relationship between tool assemblages and site function. The determination of actual site densities/mi^2 was accomplished. Significant progress was made regarding the subsurface feature hypothesis; this will be further tested during mitigation. Some progress was made regarding the association of tool assemblages with environmental zones at White Walnut. As previously indicated, tool diversity (Table 7) was "functionally" restricted in the White Walnut area, lending support for the hypothesis that many of the sites functioned as specialized use areas. Observations of lithic materials indicated a heavy reliance on local chert gravels.

Probably the most difficult problem encountered was selection and maintenance of a suitable, consistent site collecting technique. Ground cover at the sites included cultivated dry, cultivated washed, stubble and weed cover in varying degrees, and forest cover. Given such variability and recognizing that most of the cultural material was in the plow zone, the only approach was to excavate and screen selected sites. Originally, a 0.5% sample of the area of each site was planned. This was not a realistic goal, based on the project timeframe and the speed at which hand excavation and screening can be accomplished. The final solution was to maintain the excavation and

screening of 1 m^2 units but to reduce the number of units based on the size and nature of deposits at each site. This resulted in a degree of consistency and seemed to be the only approach to assessing plow zone sites of varying size, exhibiting varying degrees of surface visibility (Table 8). These same methods were employed at Burning Star Mine #4 (Haas and McNerney 1980), generating a body of comparable data.

Significance

The primary responsibility of cultural resources managers, especially contract archaeologists engaged in cultural resources assessments, is to determine the significance of the resources located. Today, in cultural resources management, there are several varieties of significance commonly discussed. Schiffer and Gummerman (1977:239-246) offer six varieties of significance: scientific, historical, ethnic, public, legal, and monetary. For the purposes of this assessment, the criteria of legal significance (Corps of Engineers and state permit requirements, etc), will be used to evaluate the archaeological resources and to make determinations of significance.

Legal significance is the basis for most cultural resources assesssments and is familiar to both contract archaeologists and federal agencies. In compliance with Executive Order 11593, the National Environmental Policy Act, the Archaeological and Historical Conservation Act of 1974, and the Federal Water Pollution Control Act of 1972 (PL 92-500), it is necessary to determine National Register eligibility. A set of criteria for assessing legal significance and determining National Register eligibility has been established.

> The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and
>
> (A) that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (B) that are associated with lives of persons significant in our past; or
>
> (C) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (D) that have yielded, or may be likely to yield, information important in prehistory or history (Federal Register 1976:1595).

Recommendations

Based on the results of field and laboratory investigations, it is our opinion that sites 21D3-67 and 21D3-122 are signficant prehistoric archaeological resources and that the adverse impacts of surface mining to

Table 8

Summary and Evaluation of Sites Tested
Burning Star #2, Deep Strip #3, Perry County, Illinois

Site No.	Approximate Site Area (m^2)	Square Meters Tested	Percentage of Site Tested	Field Conditions Visibility	Cover
21D3-67	7,800	12	.15	low	Secondary tree growth
21D3-68	9,000	30	.33	-	Cultivated
21D3-69	4,800	10	.21	-	Cultivated
21D3-70	5,500	8	.15	25%	Fallow
21D3-71	2,100	5	.24	50%	Fallow
21D3-76	4,000	6	.15	40%	Cultivated
21D3-77	2,700	5	.19	40%	Cultivated
21D3-78	10,000	14	.14	40%	Cultivated
21D3-81	8,750	13	.15	Varied	Cultivated
21D3-88	1,200	17	1.42	Near zero	Heavy weeds
21D3-91	3,000	6	.20	100%, no rain	Cultivated
21D3-92	4,820	9	.19	100%, no rain	Cultivated
21D3-93	2,100	8	.38	20%	Fallow
21D3-94	3,000	7	.23	100%, no rain	Cultivated

Table 8 (cont'd)

Site No.	Approximate Site Area (m^2)	Square Meters Tested	Percentage of Site Tested	Field Conditions Visibility	Cover
21D3-95	1,200	5	.42	100%, no rain	Cultivated
21D3-97	1,100	7	.64	90%	Cultivated
21D3-99	2,000	10	.50	20%	Wheat
21D3-101	3,200	8	.25	95%	Cultivated
21D3-102	1,800	5	.28	100%	Cultivated
21D3-107H	24,000	15	.06	60%	Cultivated
21D3-110	6,400	8	.13	80%	Cultivated
21D3-112	1,600	5	.30	80%	Cultivated
21D3-113	3,600	8	.22	100%	Cultivated
21D3-120	3,000	14	.47	75%	Planted
21D3-122	4,800	6	.13	-	Woods
21D3-124	2,500	6	.24	-	Hog lot

these cultural resources should be mitigated through additional archaeological investigations. This opinion is based on the following observations and considerations:

1. Sites 21D3-67 and 21D3-122 have never been cultivated and offer a unique opportunity to examine relatively undisturbed cultural deposits.

2. Both sites contain floral and faunal remains which will provide significant prehistoric subsistence data for a small upland stream valley, an area where little archaeological research has been conducted.

3. The depth of cultural deposits at both sites indicates a relatively intensive occupation which offers several additional research opportunities.

4. Research at these sites can make contributions to archaeological method. Uncultivated sites offer opportunities to study feature morphology and soil chemistry (phosphate levels) at locations that have not been contaminated with modern agricultural chemicals and ravaged by years of erosion.

5. Finally, both sites are likely to yield important information regarding the prehistory of the area. The dominant occupations at both sites appear to date to Late Woodland times. Indications are that there is little mixing with other cultural periods. This type of occupation could contribute significantly to our understanding of site function without the many complications of multiple occupations.

Three additional sites, 21D3-69, 21D3-97, and 21D3-101, also are considered significant, and mitigation through excavation is recommended. The significance of these sites does not lie in their individual characteristics but rather within the total archaeological context at White Walnut Creek. Their specific locations are in the post oak flats environmental zone, as opposed to sites 21D3-67 and 21D3-122, located in the slope woodland zone. We feel that in order to properly interpret the sites in the woodland zone (21D3-67 and 21D3-122), it will be necessary to carry out limited and specific investigations at the three sites in the post oak flats (21D3-69, 21D3-97, and 21D3-101).

Previous test excavations at seven sites in the post oak flat areas failed to produce subsurface features. Because the occupations were so light at these sites, it is possible that there are subsurface features (widely scattered and few in number) which were missed. All three sites have been tested and an artifact sample obtained from the plow zone. Therefore, it is recommended that the plow zone can be mechanically removed from sites 21D3-69, -97, and -101 in an effort to determine site function and cultural affiliation.

Recommendations for the Remaining Sites

It is the opinion and recommendation that the remaining 56 prehistoric and historic occupations identified do not constitute signficant cultural resources. Mitigation will not be necessary at these sites. The sites are 21D3-68, 21D3-70 through -96, 21D3-98 through -100, 21D3-102 through -121, and

21D3-123 through -127H. This recommendaiton is based on the following considerations:

1. Test excavations have been conducted at 21 (37.5%) of the 56 sites. This constitutes an adequate sample and effectively documents the nature, extent, and integrity of the cultural deposits at the sites.

2. The above investigations (Phase II test excavations at 21 sites) and the proposed mitigation at sites 21D3-67, -122, -69, -97, and -101 in combination provide a representative sample of the cultural resources of the White Walnut Creek area, making it unnecessary to excavate additional sites.

3. Phase I test excavations and the screening of soil through 1/4 in mesh provide an adequate artifact sample from a large number of sites which will be suitable for future research.

4. The cultural deposits were light and shallow on all of these sites. The probability that subsurface undisturbed deposits exist that would provide significant temporal and cultural data is very unlikely.

5. The historic components and historic sites in the above sample date from the mid-nineteenth to mid-twentieth century. Such sites are numerous locally, are not culturally or historically unique, and represent a period of recorded and well-documented history.

Further, there were no significant historic architectural resources within the permit area which required further assessment or mitigation. Standing structures which do not exceed 50 years of age have been removed or destroyed. In the present context, there is no evidence which would support the nomination of any of these sites to the National Register of Historic Places.

Phase III Mitigation Recommendations

Sites or resources may be preserved through avoidance, realignment of construction right of ways, or abandonment of construction plans. However, this nation's need for coal, the massively destructive nature of surface mining, and the nature of the archaeological resources in question preclude alternative mitigation plans. The most viable and practical means of mitigating the adverse impacts of premining construction and surface mining on sites 21D3-67, -69, -97, -101, and -122 is to preserve the scientific and cultural data that these sites contain through excavation and analysis.

The unique and specialized nature of sites 21D3-67 and 21D3-122 offer potential for answering specific research problems including questions regarding soil chemistry, feature morphology, cultural and natural deposition, and erosion.

Research strategies at sites 21D3-69, -97, and -101 will focus on a search for subsurface features, establishment of cultural affiliation, and obtaining radiocarbon dates. The plow zone will be removed with heavy equipment, and field work is expected to be completed in two to three weeks. The forest cover at sites 21D3-67 and 21D3-122 will require hand excavation.

These excavations will be preceded by phosphate mapping of the site and then located in a manner to answer the proposed research questions.

The foregoing recommendations are the result of an intensive Phase I survey and assessment effort and the evaluation of the methods used and the cultural resources identified at Deep Strip #3. It is our opinion that the recommendations are consistent with the nature of the cultural resources discovered and the nation's energy requirements.

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APPENDIX A

Definition and Discussion of Prehistoric Artifact Analysis Categories

DEFINITION OF TERMS

The following are brief definitions and explanations of terms and categories used in the analysis of prehistoric artifacts recovered during archaeological investigations in the White Walnut study area.

Bifacially Worked Tools
(Biface Series, Figure 22)

Bifacial tools and bifacial tool fragments include tools commonly referred to as projectile points, drills, and hafted scrapers.

Biface: includes those complete tool forms with flaking extending over both ventral/dorsal surfaces but with none of the modifications listed below. This category includes both utilized tools and unutilized preforms or blanks.

Pointed Biface: a biface having converging lateral edges.

Beveled Biface: a biface with either one or more beveled lateral edges or a beveled distal end.

Narrow, Parallel-sided, Pointed Biface: a biface with a narrow, parallel-sided blade, steep-angled lateral edges, and a bi-triangular cross section commonly referred to as a drill.

Biface, Haft Element: refers to a biface exhibiting haft modifications either by notching, edge grinding, or stem preparation.

Biface, Pointed, Haft Element: a pointed biface with haft modification commonly referred to as a projectile point.

Biface, Haft Element, End Beveled: a biface with a beveled distal edge and a haft modificaiton.

Narrow, Parallel-sided, Pointed, Haft Element: the same characteristics as narrow, parallel-sided, pointed bifaces, except with a haft modification.

Biface Fragment: refers to a fragment of a bifacially worked tool which lacks sufficient form to be placed into any of the above categories.

Modified Rock

Tools commonly referred to as utilized glacial cobbles or manos (Figure 23).

Grooved Stone: refers to any rock (but usually sandstone or limestone) which has either a U-shaped or V-shaped groove on one or more surfaces.

Pitted Stone: any rock which has distinctive concavities on one or more surfaces.

Stone, Battered-crushed: refers to igneous or metamorphic rock which shows definite evidence of battering/crushing on one or more surfaces or edges.

Stone, Planar-faced: any rock with one or more faces worn smooth and flat by grinding/abrasion.

Stone, Battered-crushed on Planar Face: refers to any rock which has battering or pecking on a planar surface.

Stone, Planar-concave Faced: refers to any type of rock with a shallow concavity worn into a flat surface through grinding/abrasion.

Tool Definitions
(Uniface Series, Figure 24)

The unifacial blade and flake series have been referred to as scrapers, utilized flake groovers, etc. It is likely that some were multi-purpose tools, serving a variety of functions, or that some were highly specialized.

Beaked: a hooked projection made by unifacial flaking usually formed by a U-shaped notch (Crabtree 1972:38).

Burin: a flake removed from the edge of an object, usually parallel to the long axis or transversely or obliquely oriented (Crabtree 1972:48).

Notch: refers to a semicircular indentation produced by unifacial flaking.

Spur: pertains to flakes with one or more tiny, sharp projections, usually formed by two unifacially flaked notches or lateral edges (Faulkner and McCollough 1973:82).

Crushing: pertains to a concentrated area of small and narrow, deep crenulations which are perpendicular to the lateral edge; a result of extensive battering.

Nosed: a blunt projection produced by two unifacial flaked notches.

Pointed: refers to a pointed distal/proximal end produced by converging, unifacially retouched lateral edges.

Polish: pertains to the glossy texture on a flake in a digging or cutting capacity produced by heavy utilization. Polished flakes are usually removed from a larger tool.

Lateral Retouch: refers to unifacial retouch on the margins of flakes and blades on either or both sides of the longitudinal axis (Crabtree 1972:72).

End Retouch: refers to marginal, unifacial retouch on the distal or proximal end of a flake or blade.

Bifacial Retouch: refers to marginal retouch on both the dorsal and ventral faces of a flake or blade.

Modified Flake, Multiple Flaked: pertains to a flake or blade with multiple forms of marginal retouch.

Modified Shatter/Chunk: pertains to any blocky or irregular piece of chert -- with no observable flake characteristics -- which has been retouched.

Polished Stone: any type of crystalline rock which has been worn to a very smooth and glossy to semiglossy finish.

Stone, Modified Fragments: refers to chunks or pieces of any type of rock which exhibit some modification but which lack sufficient form to be placed in any definitive tool category.

Chert Core and Debitage Categories (Figure 25)

Core: any block, nodule (or flake) from which flakes have been removed (White 1963:6).

Cortex: generally refers to the natural surface or "rind" on chert-like material (Crabtree 1972:56).

Debitage: residual lithic material resulting from all stages of tool manufacture. Debitage can be further classified into shatter and flakes (Crabtree 1972:580).

Shatter: cubical and irregularly shaped chunks or pieces having few or no definitive characteristics such as bulb of force, platform, etc. Shatter is generally the result of both heavy percussion techniques and the cleavage of raw material along old fracture planes such as frost cracks (Binford and Quimby 1963:278-279).

Flake: any piece of stone removed from a large mass by the application of force. Flakes exhibit a platform and bulb of force of the proximal end. They may be of any size, shape, or dimension, depending on which technique was used for detachment and the size of piece of raw material, or core, and the desired finished product (Crabtree 1972:64).

Decortication flake: a flake which has the dorsal surface partialy or wholly covered by the unmodified cortex of the raw material with the ventral surface showing scarring from heavy percussion (Binford and Quimby 1963:287).

Primary decortication flake: a decortication flake whose entire dorsal side is covered with cortex. Generally these flakes are assumed to have been removed solely for the purpose of removing the cortex, which generally

renders the flake unsuitable for most types of tools and were discarded (White 1963:5).

Secondary decortation flake: a decortication flake whose dorsal surface, lateral or distal sides, is only partially covered with cortex. These flakes were also removed for the purpose of removing the remaining cortex. However, edges which are free of cortex permit the flake to be used for certain types of tools (White 1963:5).

Interior flake: A flake with no cortex.

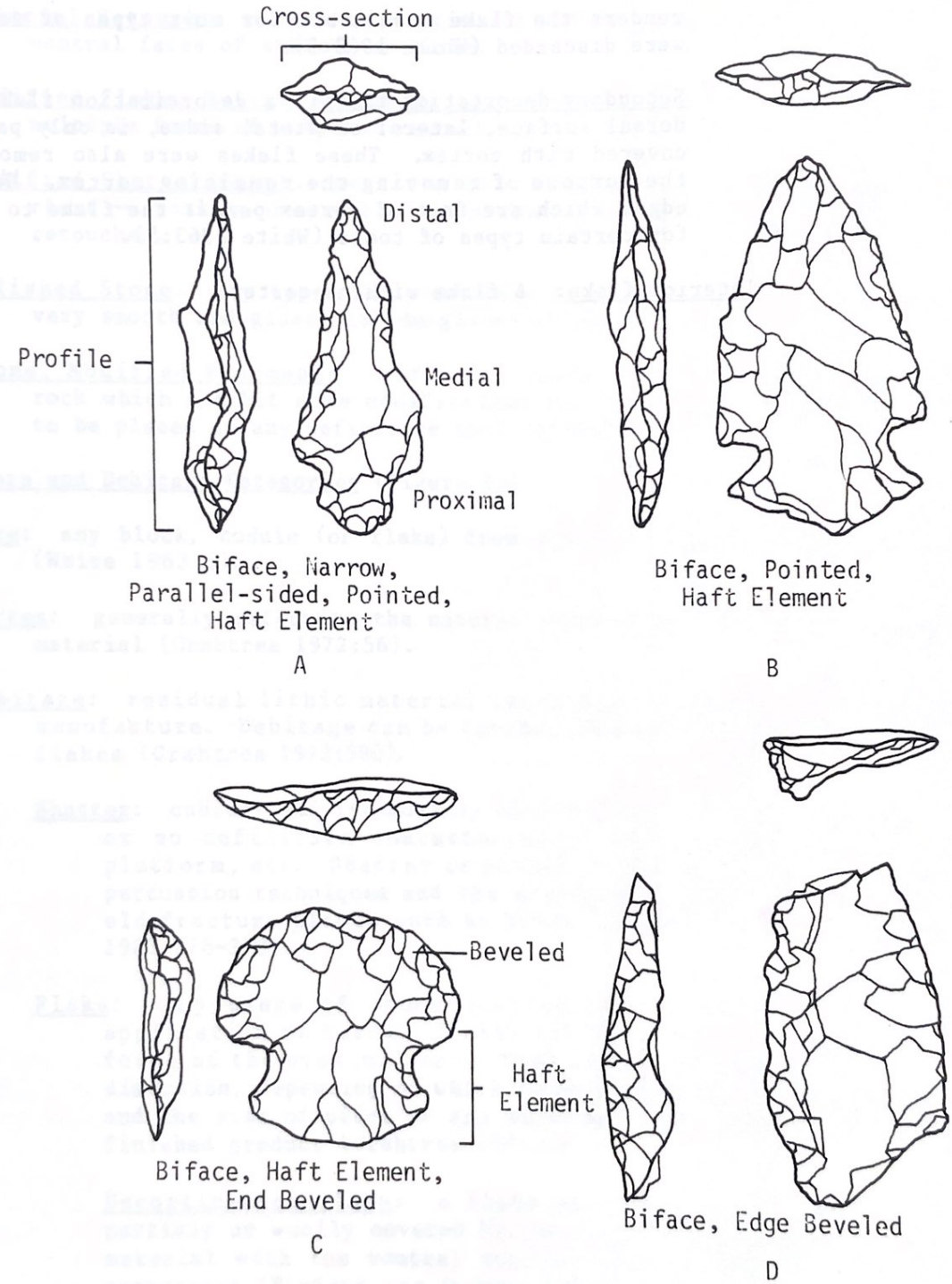


Figure 22

Bifacial Tool Attributes

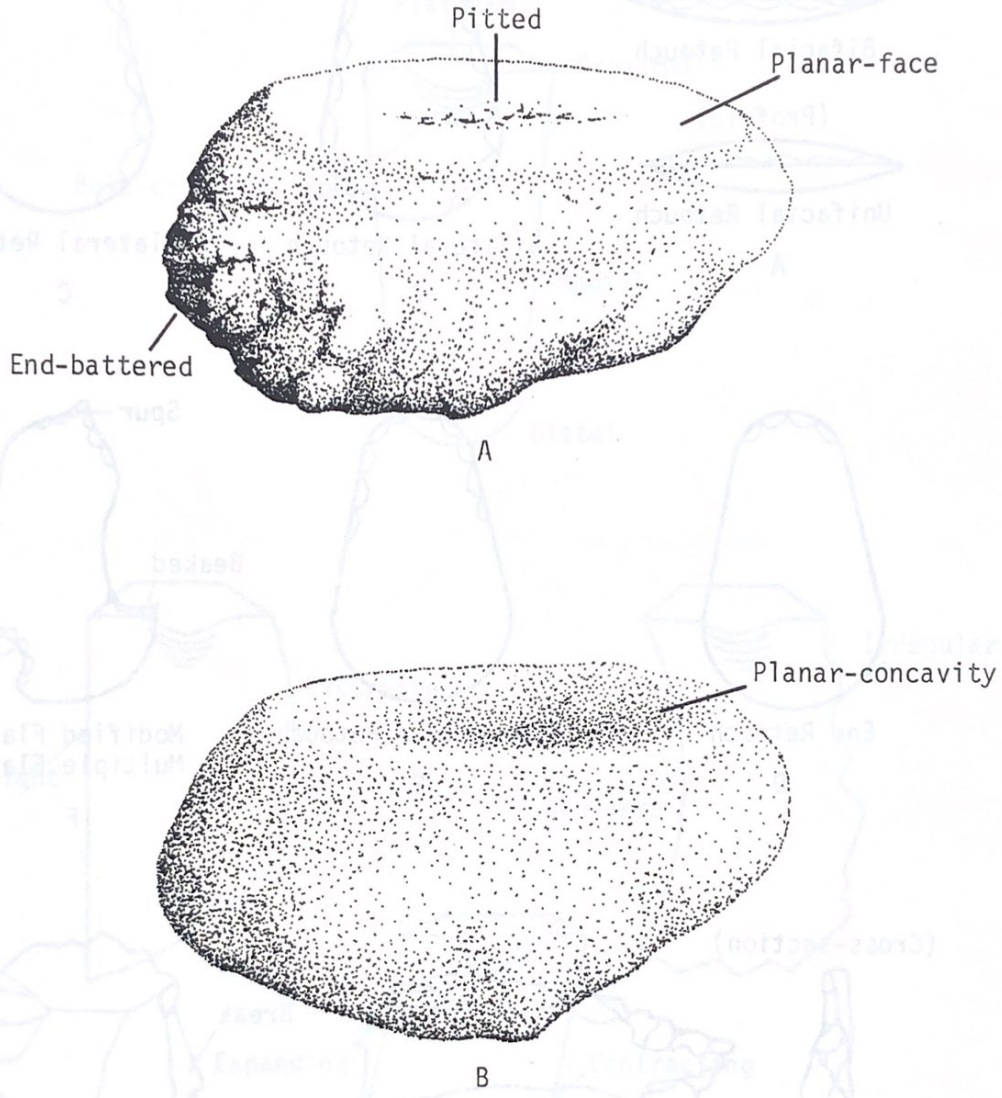


Figure 23

Utilized Cobble Attributes

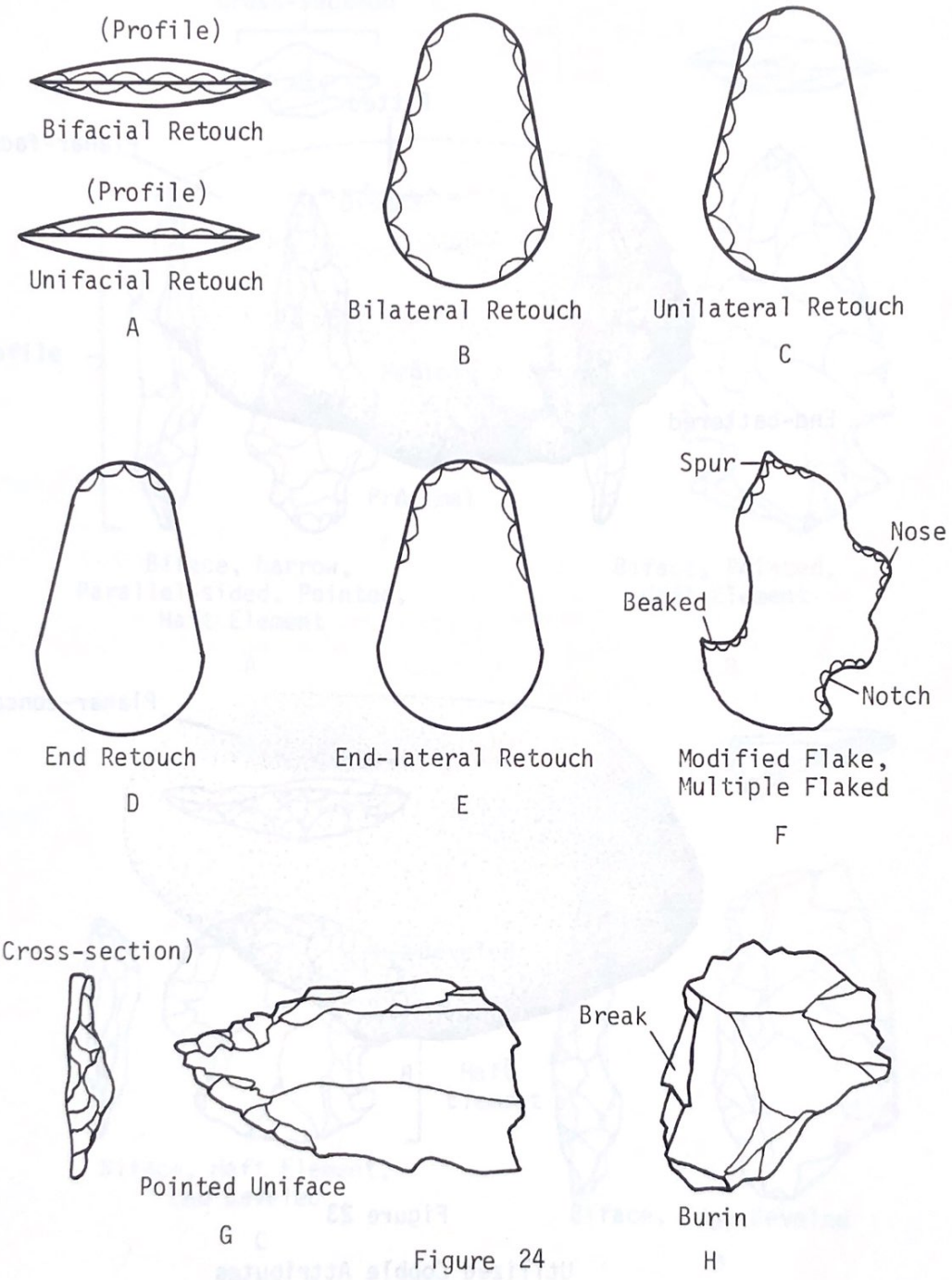


Figure 24

Flake Tool Attributes

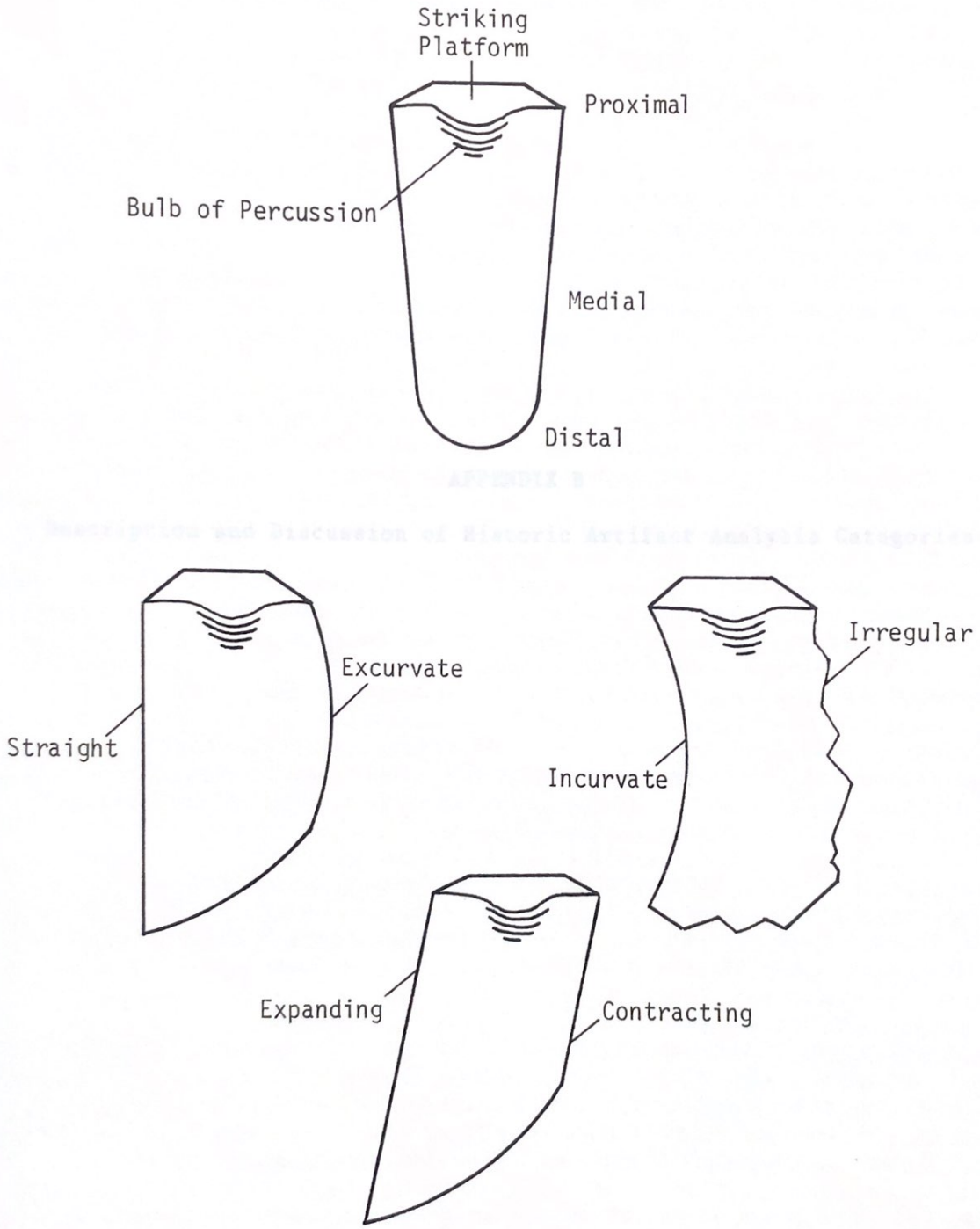


Figure 25

Flake Nomenclature and Edge Shapes

APPENDIX B

Description and Discussion of Historic Artifact Analysis Categories

The following are discussions of terms and categories used in the analysis of historic artifacts recovered during archaeological investigations in the White Walnut study area.

Analytical Considerations

Ceramics

Ceramics from the White Walnut collections were examined using a combination of the classification systems suggested by Price (1979), Lofstrom (1976), and McKay (1979). Some modifications and additions were needed in order to describe materials from this area. Collections were separated into earthenware, stoneware, and porcelain. A miscellaneous ceramics class was utilized for objects such as figurines, door knobs, and pipe fragments.

Earthenware. Earthenware types were identified based on paste color, paste texture, and glaze color. Ware types generally have been accepted as temporal indicators for historic ceramics (Hume 1970; Price 1979). The three most dominant types in the nineteenth century were creamware, pearlware, and whiteware. Creamware dominated the market until 1779 when Josiah Wedgewood introduced pearlware in an attempt to produce a cheaper earthenware. There is some confusion about when pearlware declined in popularlity, being replaced by whiteware. Hume (1970:130-131) observed in his studies that pearlware begins to disappear around the 1820s, whereas pearlware continued to be popular throughout the first half of the nineteenth century (cf. Lofstrom 1976). By at least 1850, whiteware was being produced for English and American markets. It increased in popularity and rapidly replaced other types of wares.

Creamware is described as having a yellowish or cream colored paste with a lead glaze which has a yellowish tint (Price 1979:10). It is easily identified by observing the glaze gatherings where the glaze is likely to puddle, i.e., bases of plates or handle parts.

Pearlware can be distinguished from creamware by observing a bluish or greenish tint to the glaze, caused by the addition of cobalt. The paste appears white. Some care should be observed when identifying the bluish tint where the glaze tends to puddle. Whiteware can also have a blue cast in these places.

Whiteware was a further attempt at a whiter earthenware. The lead used in pearlware glazes was replaced with borax. Visually, the paste will appear slightly whiter and denser than either pearlware or creamware. The glaze over the body of the ware appears cold white with some bluing only where it puddles or where a design element diffuses into the surrounding glaze.

In 1813, "ironstone" was introduced as a new type of earthenware by C. J. Mason and Company of Lane Delph, England. It was a very dense, durable, inexpensive ware and became popular in use by hotels, schools, the military, and other institutions. It was also quite acceptable for home use. The Fenton Pottery Company, founded by Mason in 1825, continued to produce ironstone until 1851 when it closed, and the patent expired. At that time, both British and American companies began to produce ironstone (Fontana and Greenleaf 1962:92).

Some archaeologists have attempted to distinguish macroscopically between whiteware and ironstone; but, after working with the collections, it became evident that a visual distinction between the two is difficult. Lofstrom (1976:23) suggests there is a gradual change of color between whiteware and ironstone, from a white to a "cold greyish-white color."

In addition to differentiating ironstone from whiteware, highly vitrified earthenware was separated. These nondecorated sherds were characterized by an extremely dense paste that tended to be slightly translucent. Vitrified earthenware is not a true porcelain. These sherds can be distinguished from ironstone and whiteware in that they are thinner and less porous.

An additional category was added to the classification system described by Lofstrom (1976), Price (1979), and McKay (1979). This ware type was termed "commonware" and is meant to describe earthenwares which have one overall glaze color and are free of other painted or printed design elements. No reliable date for this type of material was found.

Makers' marks were identified and dates assigned to material where it was possible. Sources found to be most useful for this interpretation were Godden (1964), Hartman (1943), and Thorn (1947). When definite dates could not be assigned to ceramics by identifying markers, design elements were relied upon. Design elements encountered for this area have been divided into six general classes in order to facilitate discussion: handpainted, transfer print, raised relief, edge decorated, specialty designs, and undecorated ware.

Price (1979:21) noted a trend in color preference in handpainted design through time in her analysis of handpainted ware from the Ozark border region. She suggested a usage of soft pastel or earthen hues until ca. 1830, after which bright colors seem preferred and utilized until 1860 or later. The non-painted wares with raised relief along the inside rim of the plate date post-1840 or -1850 (McKay 1979:37; Price 1979:22). A type of edge decoration, shell edge, is a closely related design element to raised relief (Plate 1 a, this report). This design also is molded, but blue paint has been added to accentuate the raised relief. Shell edge decoration continued until approximately 1850 (Price 1979:18).

Two design elements have been grouped under the class of specialty designs. These are annular banding (Plate 1 c, this report) and spongeware. Annular banded wares are described as singular or multiple bands of slip applied in concentric circles to the outer surface of a vessel. Annular banding appeared early on pearlware forms until ca. 1830, while whitewares continued to display this design style until the late nineteenth century (Price 1979:18). Based upon excavations at Fort Snelling, Lofstrom (1976:34) suggested a narrower range, from ca. 1840-1860, but definitely noted the need for further substantiation of these dates. Spongeware is a design which is applied to the surface of a vessel through the use of an ink sponge. Handpainted designs may occur in conjunction with this decorative style. This technique has been dated ca. 1820-1860 (Price 1979:19). Lofstrom (1976:35) noted in his excavations at Fort Snelling that earthenware after 1855 tended to have no design element.

Stoneware. One of the greatest problems encountered in analyzing the White Walnut historic materials was describing stoneware. McKay (1979:39-43) indicated in her discussions that stoneware is a result of local ceramic industries and necessitated a knowledge of local source areas. These data were not found to be readily available.

The material originally was sorted into fragmented and diagnostic stoneware sherds. Fragmented sherds were described by glaze color only. This method was found to be totally ineffective since glaze colors vary greatly, even within a single vessel. Identifiable fragments were described based on pastes, glazes, surface textures and treatment, and body and rim thickness.

Porcelain. Porcelain is a hard, white, transluscent, nonporous ware, in which the mineral feldspar has been used as the flux (Moore and Burge 1981:69, passim). What is generally thought of as "porcelain" and used for sinks, tubs, and commodes are actually a variety of highly vitrified earthenwares or china clays (Rosenthal 1952), which is not true porcelain. Porcelain, used primarily for domestic ware, has been manufactured in the United States since the eighteenth century, with the practice of using cobalt blue makers marks being initiated in the nineteenth century.

Glass

Glass was categorized into intact, fragment bottles; flat glass; curved glass; and fragmented glass. Glass containers can be dated according to changes in the manufacturing methods. Bottle manufacturing methods changed drastically through the 1800s and early 1900s. In many cases, the new methods were patented; and, therefore, accurate dates can be assigned to the introduction of the new method.

At the beginning of the nineteenth century, the majority of bottles was free blown, and molds were rarely used. Thus, bottles made during this period seldom exhibit mold seams. Although bottle molds were utilized prior to the 1800s, they were never employed on a large scale until ca. 1840-1950 (Lorrain 1968:40). There were generally three types of early bottle molds: dip, two-piece, and three-piece. Bottles made in two- and three-piece molds were formed by hand blowing molten glass into the mold. In most cases, two seams can be identified on opposite sides of a finished bottle where the pieces of a mold join together. The vertical seams extended up the neck of the bottle, disappearing before the lip. This portion of the seam was obliterated during the process of applying the free formed lip.

Shortly after the production of the two-piece mold, the snap case was developed, ca. 1857 (Lorrain 1968:40). This tool held the bottle around the body for lip finishing. It eliminated the use of the pontil for this purpose which was more time consuming and disfigured the base of the bottle.

The semiautomatic bottle machine was developed in 1881 (Lorrain 1968:43). This method produced a bottle which was entirely machine formed with the exception of the rim itself. The mold seams on bottles made by this method extended the full length of the bottle, up to the lip but not onto it, extending further than on hand blown bottles made in a two-piece hinged mold.

The semiautomatic bottle machine was not utilized widely, so bottles made by this technique are relatively rare (Lorrain 1968:43).

The fully-automatic bottle machine was developed in 1903, but it was not until the 1920s that bottles of this type were produced on a large scale (Lorrain 1968:43). The seams on bottles made on the fully-automatic bottle machine extend from the base vertically up both sides of the bottle onto the lip.

Experimentation with new types of closures and finishes occurred between 1840 and 1895 (Lorrain 1968:41). Many of them did not survive, but some of the more popular can be found in archaeological context and should be identified. Early types of lips were often simply sheared off, and the rough edges were smoothed. The sheared lip may be characterized either by a straight pipe-like neck-lip or a flaring mouth, often exhibiting rolled and folded lips.

After 1840 (Kendrick 1968:14), a demand for effervescent wines required a new closure for bottles. The pressure from the effervescence would often force the cork from the bottle. Thus, corks had to be wired into place. This type of closure, called a "laid on ring," was made by applying a band of glass to the neck about 1/4 in below the lip or mouth of the bottle. The wire which anchored the cork was tied below the ring of glass. By at least 1850 (Lorrain 1968:40), a lipping tool had been invented for forming the ring. This method often resulted in the partial disappearance and twisting of vertical seams around the neck.

In 1858, Mason perfected the canning jar with threaded screw caps (Lorrain 1968:40). The first closures used were made of zinc and sealed with a rubber gasket on the neck, not the lip, of wide-mouth jars. Problems resulted when contents of the jars reacted with the zinc and rubber lid. Canning jars become more popular in 1869 when Lewis Boyd introduced transparent glass seals (McKay 1979:46). These fit inside the zinc caps, sealing contents away from the metal. In 1882, the transparent liners were replaced with the familiar white, milk glass liners (McKay 1979:46). These liners continued to be popular into the 1900s.

Carbonated beverages such as soda and beer required closures that were capable of withstanding pressure but were easily removed by the consumers. In the 1880s, a popular closure which fit this demand was the lightening fastener (Lief 1965:16). This consisted of an internal ceramic stopper that clamped to the neck of the bottle by an external wire bail. Since this closure was expensive to produce, both the bottle and stopper were reused. In 1891 (Lief 1965:18), an inexpensive closure was invented by William Painter. This was the crown cap which is still used today.

In the late 1800s and early 1900s, clear glass was being produced by adding manganese to the glass mixture. This element reacted with impurities, such as iron, to neutralize them, resulting in decolorized glass. When the final glass product was later exposed to the sun and weathering, the manganese became oxidized, and the glass turned purple. The change in color should be directly proportional to the manganese content used to reduce impurities. Prior to automation, the bottle maker would vary the amount of manganese added

to a single batch of glass to reduce the impurities in that solution. Due to increased mechanization in glass making by the end of the nineteenth century, the amount of manganese could no longer be varied, so large quantities were used to insure decolorization. The resulting product was very temperamental. Bottles produced during this period, ca. 1890 to 1916, will probably react drastically and change to a deep amethyst (Kendrick 1968:184). The major supplier of manganese to the United States before World War I was Germany. As a result of the war, the trade was discontinued. Selenium was then used as a decolorizing agent, which changes to a slight amber color when photosynthesized (Kendrick 1968:184).

Most of the flat glass observed was window glass. Several sources suggest that window glass may be a temporal indicator (Demeter and Lowery 1977; Martinez 1977). These investigators suggested that window glass became increasingly thicker and uniform through time as construction methods improved and as demands increased. Demand for this type of glass became greater in the west, as areas became settled. Rough transportation required that glass be as durable as possible.

Discussion of Results of Analysis

Ceramics

Earthenware. The collection of earthenware recovered from the White Walnut area contained no creamware or pearlware. Only whiteware and commonware were found. The samples examined from the White Walnut project area included a number of whiteware sherds with makers' marks. A few, upon examination, proved to be "ironstone." The mark generally identified the ware type with a written description. Those encountered during this study read "Royal Ironstone," "Ironstone China" (Plate 1 e, this report), and "Royal Patented Ironstone" (Plate 1 g, this report). These marks seem to vary widely in style.

The majority of earthenware examined during this analysis was void of decorative elements. Most decorative elements were found on whiteware. The most frequently noted design element in the White Walnut collections was the raised relief design. In most cases, these were floral designs, molded onto the inside rim of plates and platters of whiteware (Plate 1 d, this report). In addition to the design, platters often displayed scalloped rims. Occasionally, the commonware displayed this design element. In these cases, the raised molding was geometric in style with some combinations of geometric and floral motifs, which were not limited to rims.

Several pieces of shell edge decoration were identified in the collections. These date ca. 1830-1860 (McKay 1979:37). After this time, the design was applied in paint and no longer displayed raised relief.

Handpainted designs in the collections from the White Walnut area were exclusively of floral motifs painted in singular or multiple colors. Use of color appears to be the most diagnostic attribute for handpainted sherds since this decorative technique was utilized throughout most of the nineteenth century. The White Walnut collections contained examples of brown and pink in singular colors and pinks, greens, reds, blacks, and grays in multiple colors.

Artifacts were so fragmentary that additional colors and combinations may have been utilized on the original vessel surface. In most cases, the colors were brighter. One artifact with a handpainted, brown floral design had an ironstone maker's mark on the reverse surface. The tableware of this pattern was produced post-1881 (Hartman 1943:105).

Both scenic and floral patterns were observed on the transfer printed earthenware excavated from the White Walnut area. Floral patterns tended to dominate the collections, and single colors were used in all cases except one (Plate 1 b, this report). The artifacts were too fragmented to distinguish an overall design motif in any of the sample. The one instance of a multiple color motif was a fragment of a platter. The rim was scalloped and trimmed with a gilded band along the edge. This decorative technique was not utilized prior to 1890 (McKay 1979b).

Examples of annular design appeared in the White Walnut collections. The fragmentary nature made it impossible to determine to what portion of the vessel annular design had been applied and in what number. Colors of bands occurring in this collection included blue, black, brown, green, and yellow. Only a small number of sherds which exhibited sponge applied decoration was present in the collections. In all cases for the White Walnut material, blue was used for the application of this design.

The most frequent color of commonware encountered was yellow, although a small sample of blue, red, and pink was found in the collections. One problem was noted with the use of this particular ware classification. Most of the sample fell into a descriptive category of fragmentary sherds. These were sherds which either had no design element apparent or the piece was so badly eroded that a thickness measurement could not be taken. The fragmentary nature of these artifacts would not indicate a design element if it had been present on the original vessel.

The fragmentary nature of the earthenware found at White Walnut sites hindered discussion of vessel forms. In most cases, artifacts could not be placed in functional categories.

Stoneware. Stoneware in the collections for the White Walnut area seldom had intentional surface treatment, and makers' marks were never encountered. In most cases, the collections examined included only very fragmentary vessels. No definitive dates could be assigned to this material.

One variable was noted having some consistency throughout the collections. Paste color of wares from this general vicinity appear to be more frequently gray, with cream color the next most frequent. Gray and brown glazes seemed to be favored. These characteristics may reflect the source area for clays utilized by local or regional producers. At this time, the sample reviewed was not extensive enough to make any definitive statements.

Porcelain. Only three pieces of ceramics were defined as porcelain. Characteristically, these pieces can be described as very dense white paste and were at least partially translucent. Two of the three pieces were decorated: one was handpainted over the surface glaze in an Oriental style,

using several colors; the other was a decorated cup rim with a design element of blue transfer print.

Glass

The White Walnut sites yielded a total sample of 44 bottle fragments. In 12 instances (27%), a construction method could not be determined for the fragments. The remaining 73% contained examples of construction methods previously described: 34% constructed with applied lips, 34% machine made, and 5% semiautomatic bottle machine process. No free-blown bottles were encountered. The collection of glass from the White Walnut area contained a sizable quantity of purple-tinted glass. These materials have been quantified under categores of curved, flat, and fragmented glass and bottle fragments. The degree of color change varied, presumably due to the amount of exposure to sunlight and the manganese content.

The most frequently encountered closures in the collection were either simple corks or the metal crown cap. One specimen of a sheared lip was found at 21D3-107H (Map 5, this report). Several of the bottles displayed characteristics of tooled lips.

The small sample of flat glass proved to be of little use as a temporal indicator or for any other type of analysis. Proveniences, in almost all cases, were not stratified and thus could not reflect the increase of thickness through time.

Historic Clay Smoking Pipes

Three very small clay pipe fragments were recovered at two sites. Site 21D3-68 produced one fragment and site 21D3-113 two fragments (Map 5, this report). The fragments are so small that any identification is tentative at this time.

The specimen from site 21D3-68 was a stem fragment which included approximately half of the opening. It exhibited a raised bead of clay which encircled the stem at the opening and a remnant of the longitudinal mold seam. The exterior was a dull buff-tan, and the paste was gray in color. The projected diameter of the stem opening was 5 mm. Stem thickness was 4 mm.

One specimen from site 21D3-113 was also a stem fragment. It exhibited a narrow bead of clay which encircled the exterior surface of the stem 3 mm below the stem opening. This narrow band exhibited a single diagonal tool impression. Extending toward the bowl and beginning below the stem band were two shallow grooves 2 mm apart. The surface exhibited a brownish (chocolate colored) glaze, and the paste color was gray. Stem thickness was 2 mm.

The other specimen from site 21D3-113 was a bowl fragment which included the lip, rim, and a small portion of the body of the bowl. A raised bead of clay 22 mm wide encircles the bowl 5 mm below the lip and exhibited diagonal tool impressions. Extending below the encircling bead were parallel groves 2 mm apart. The surface and paste were a dull gray. Bowl thickness was 2 mm.

The manufacturing source of the White Walnut pipe specimens cannot be

determined at this time. Parallel grooves impressed over the entire stem and bowl is a common design for pipes from several sources and persisted throughout the years of clay pipe production. The only comparable stylistic attribute which may prove helpful is the diagonal tool impressions on the bead encircling the bowl of the specimen from site 21D3-113. A pipe from Point Pleasant, Ohio (Sudbury 1979:Plates 6, 20), exhibited a similar motif. Also, two stem fragments from Point Pleasant (Sudbury 1979:Plate 13) were generally similar in appearance.

With thousands of clay pipes being manufactured in southern Illinois from 1857 to 1900 by the Kirkpatrick pottery in Anna, the source of the White Walnut specimens could be very close. That the White Walnut specimens seem to be stylistically similar to Ohio types is also interesting in light of the Kirkpatricks' earlier pottery ventures in that state.

Gunflints

Two gunflints were collected from the surface of 21D3-68. These artifacts represent the oldest historic material found in the White Walnut project area. They probably date to ca. 1840-1850 (Mitchell 1980; Parrish 1980). This date is further substantiated by other historic materials collected from 21D3-68.

The larger of the two gunflints measures 17.3 mm in length and 15.3 in width (Plate 1 h, this report). It is of the type utilized in flintlock rifles. The flint was constructed from a glossy black chert and is square in planar view. This specimen originally was the shape of a truncated pyramid in cross section and was worn to its present shape through extensive use and reworking (Mitchell 1980). The chert from which this tool is formed falls within the range of locally available cherts. The color and texture are characteristic of St. Louis cherts, such as the Cave-in-Rock types (May n.d.:22), or Harrison county chert (Seeman 1975:47). Flints from the British quarries also were found to range from light gray to very black. the gunflint visually corresponded to specimens at the darker end of this spectrum. At present, the source of chert materials utilized in the production of the White Walnut specimen could not be determined with any reliability.

Mitchell (1980) indicated that American cherts used for flint making by Euro-American settlers were not trafficked extensively until the 1800s. Aboriginal construction and use of gunflints also have been noted (Good 1972:137). The knowledge and utilization of local chert sources in these cases would occur much earlier in time. Production methods would also be different.

The black gunflint at White Walnut appears to be similar to the French styles (Good 1972:137). This artifact is similar to a type described in the Michilimackinac report. The class is series A, type 1, and can be described as follows:

> The flint has a single flake scar on one side (this side will be referred to as the bed) and three transverse flake scars on the opposite side (the face). The central flake scar on the face is parallel to the bed of the flint. On the bed, one edge is beveled

by retouch, while on the face three edges are retouched, leaving only the beveled edge unworked (Stone 1974:246, 248).

For a chert to be quarried in one country but formed by a technique characteristic of another is not unusual. Whitthoft (1967:40) indicated that flint was an international trade commodity. He also suggested that the British technique of forming gunflints did not appear archaeologically before 1879, although flint mining occurred prior to this time at British quarries (Good 1972:158).

The second gunflint did not resemble any of the classes described by Stone or Good. It was more irregular in shape and form. It can be best described as roughly pentagonal in shape with multiple flake scars on both the face and bed. Flake scars transverse laterally across the flint. Retouch is not apparent on either face, but battering is visible along the short parallel sides. The chert is creamy white with honey colored inclusions. It could conceivably fit within the range of locally available Burlington cherts. The gunflint was 17.2 mm in length and 14.6 mm in width. Mitchell (1980) and Parrish (1980) felt this latter specimen was only a fragment of a flint or perhaps formed from a previously worked piece of chert. It was not of any distinct manufacturing style.

Cartridges

A variety of spent shot gun shells and calibrated cartridges was collected from several sites. Included in the collections were 20- and 12-gauge shot gun shells, both the casing and projectile portions of .22 cartridges, and only the casings of .38 and .410 calibrated munitions. Three of these artifacts display distinguishing characteristics. The base of a .22 caliber cartridge from 21D3-68 was marked with a "U" and was manufactured by Union Metallic Cartridge Company (U.M.C.). Today this company is a division of Remington, a merger which occurred in 1912 (Hatch 1956:209). A similar cartridge, found at 21D3-113, is inscribed with an "R," presumably made by the Remington Company, post-dating the merger. A .38 caliber cartridge from 21D3-107 was produced by U.M.C. for a Smith and Wesson centerfire revolver. This hand weapon was manufactured after 1865 and is still being produced (Fontana and Greenleaf 1962:82). Of the three shot gun shells collected, two were manufactured by Winchester, and one was unidentifiable.

APPENDIX C

A Reexamination of Cypress Projectile Point/Knives

by
Charles Trotter and Michael J. McNerney

A Reexamination of Cypress Projectile Points/Knives

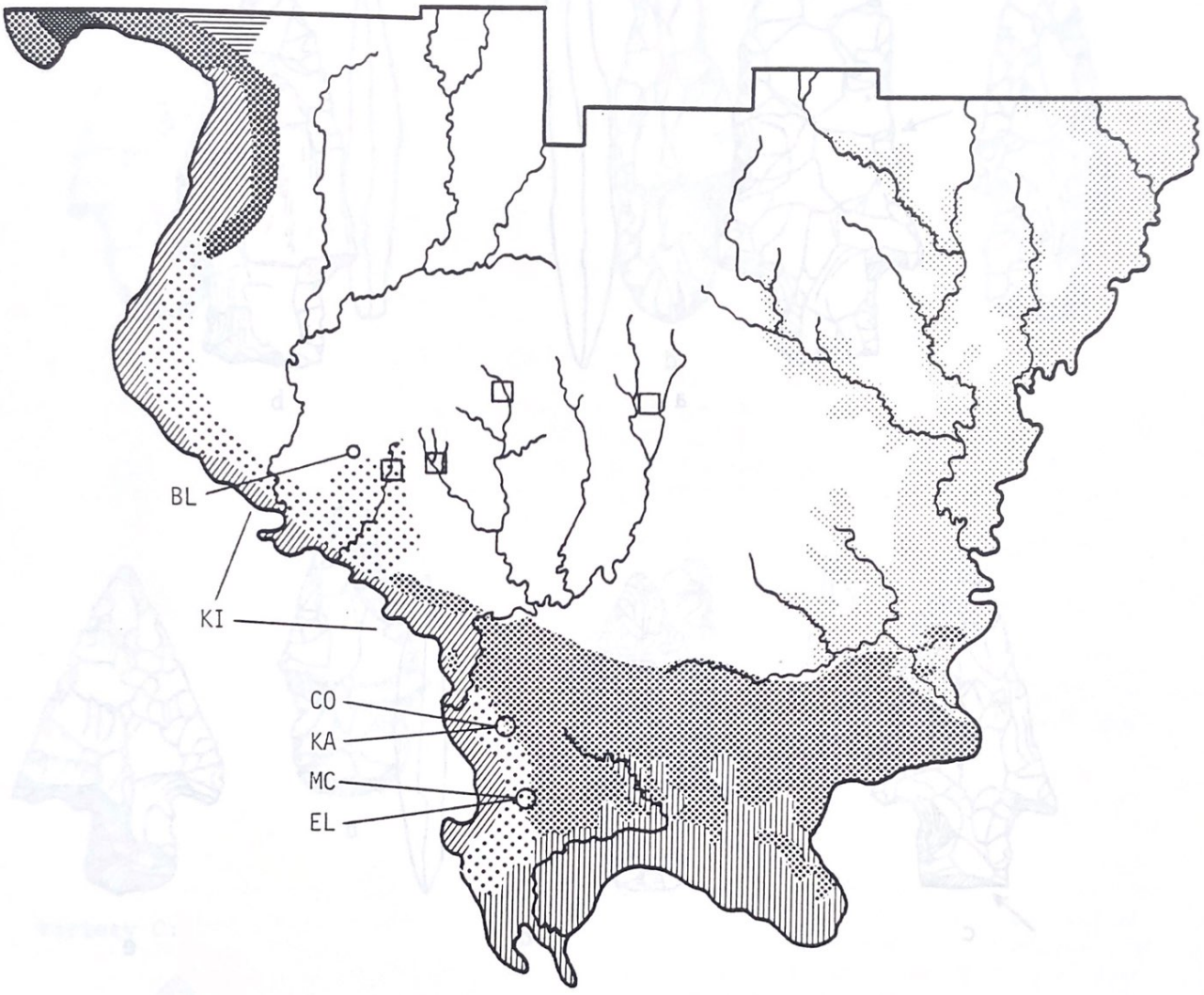
INTRODUCTION

Cypress projectile points were named by Winters (n.d.) from his survey along the Cache River in extreme southern Illinois. Denny (1972:144-147) expanded this earlier work and described the Cypress cluster consisting of five varieties. The frequency with which these tools occur in the Southern Till Plain along with obvious functional implications, i.e., high incidence of reworking, and indications that the tool is culturally and temporally diagnostic prompted this study.

METHODS

A sample of 109 tools, morphologically similar to previously defined Cypress projectile points, was drawn from two private collections and several archaeological survey collections from sites located in the upper Marys River, upper Little Marys River, upper and lower Galum Creek, and middle Big Muddy River drainages (Map 27). The earlier work of Denny (1972:144-147) described five Cypress varieties based on a sample recovered at sites along the Big Muddy River. This study has resulted in some regrouping. Denny's varieties V1, V2, V3, and an unnamed single shoulder group have been combined into Variety A (Figure 26); V5 is retained as Variety B (Figure 27 a-e); and Denny's (1972:155) unnamed contracting stem group is Variety C (Figure 27 f-h). Denny's Cypress V4 group (expanded stem) is not included at this time. After examining several hundred tools, only four expanded stem specimens were identified. The small sample size along with functional, temporal, and cultural considerations, which will be presented later, indicates that the V4 group requires additional study.

Following the literature review, the tools were sorted and grouped according to shape and metric attributes of the stem or haft element. Chert types and sources also were recorded and include Blair, Cobden, Kinkaid, Kaolin, Mill Creek, Elco, and unknown. Also present is chert which occurs as cobbles or gravel throughout the till plains and is referred to as local redeposited. Burlington chert is probably represented in these glacial deposits. The high incidence of Blair chert (Figure 28) simply reflects the proximity of this source to archaeological areas currently under investigation by American Resources Group, Ltd. A series of use, wear, and/or resharpening observations were recorded on blades, derived from earlier projectile point attribute studies by Ahler (1971:38-39) and McNerney (1975:3-10). These



Natural Divisions

- Upper Mississippi River and Illinois River Bottomlands Division (Illinois River Section)
- Western Forest-Prairie Division (Carlinville Section)
- Middle Mississippi Border Division
- Southern Till Plains Division
- Wabash Border Division
- Ozark Division
- Lower Mississippi River Bottomlands Division
- Shawnee Hills Division
- Coastal Plains Division

0 — 50
Miles

MAP 27

Tool Sample Locations and Chert Source Areas

☐ Tool Sample Locations

Chert Source Areas
- BL - Blair chert reference section
- CO - Cobden
- KA - Kaolin
- MC - Mill Creek
- KI - Kinkaid
- EL - Elco

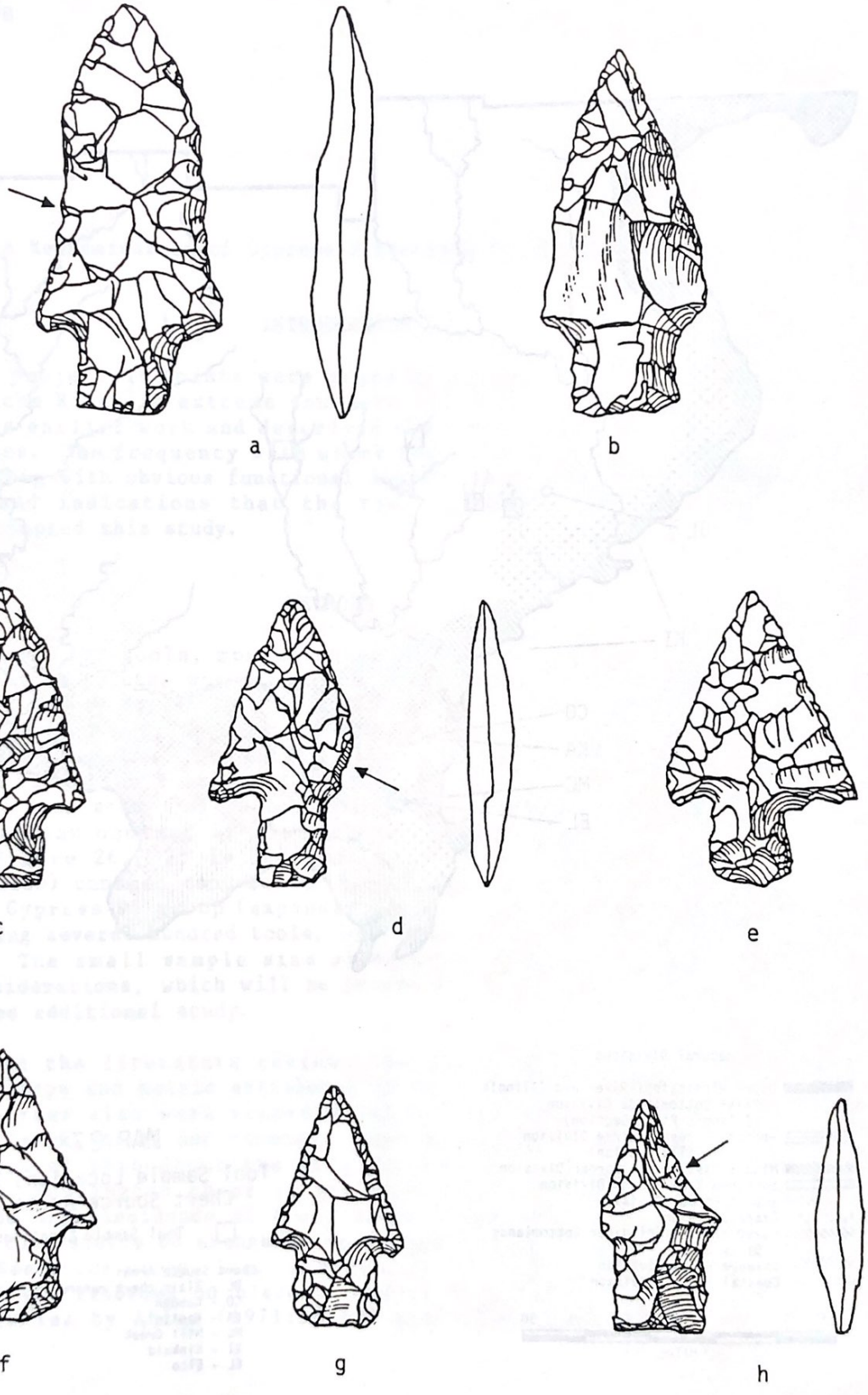
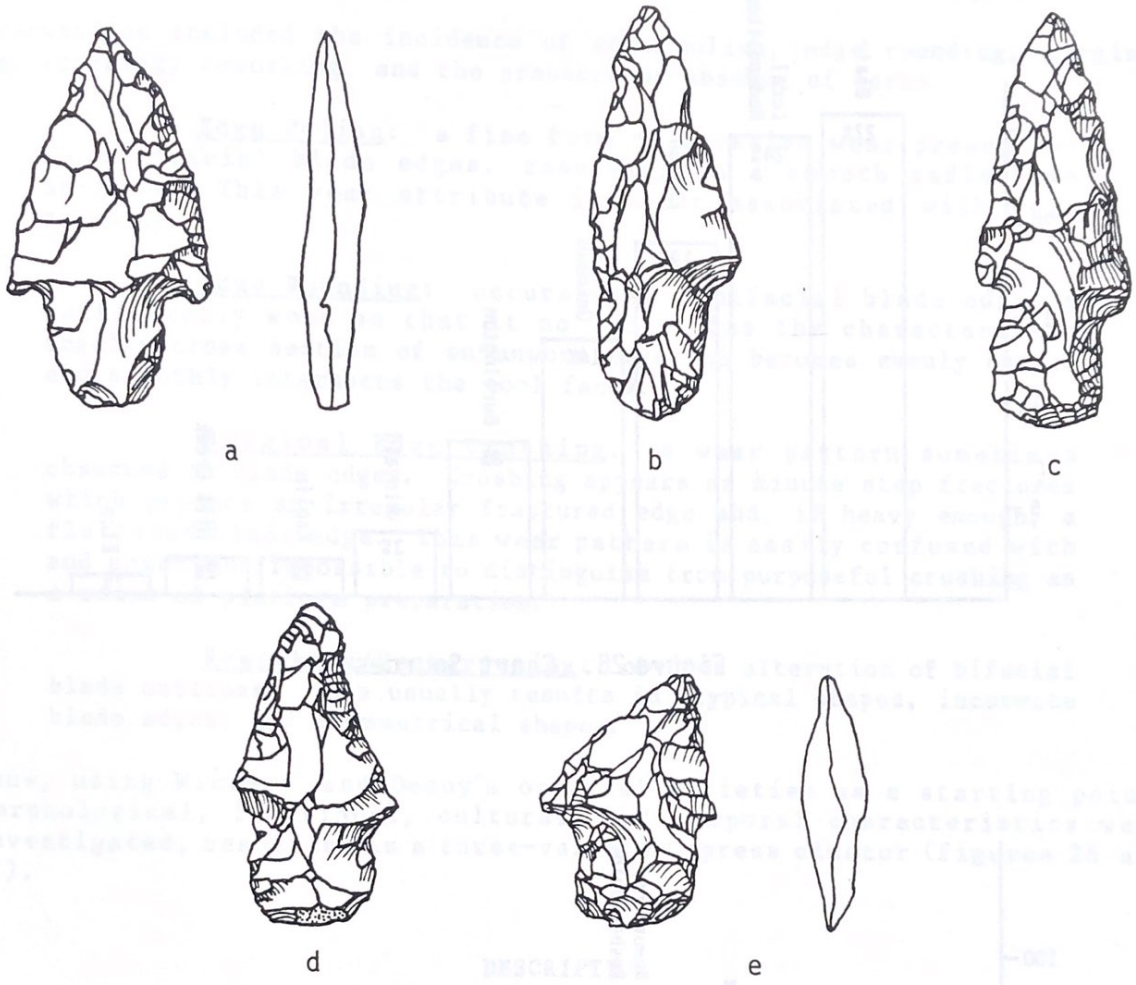


Figure 26
Variety A

Variety B:



Variety C:

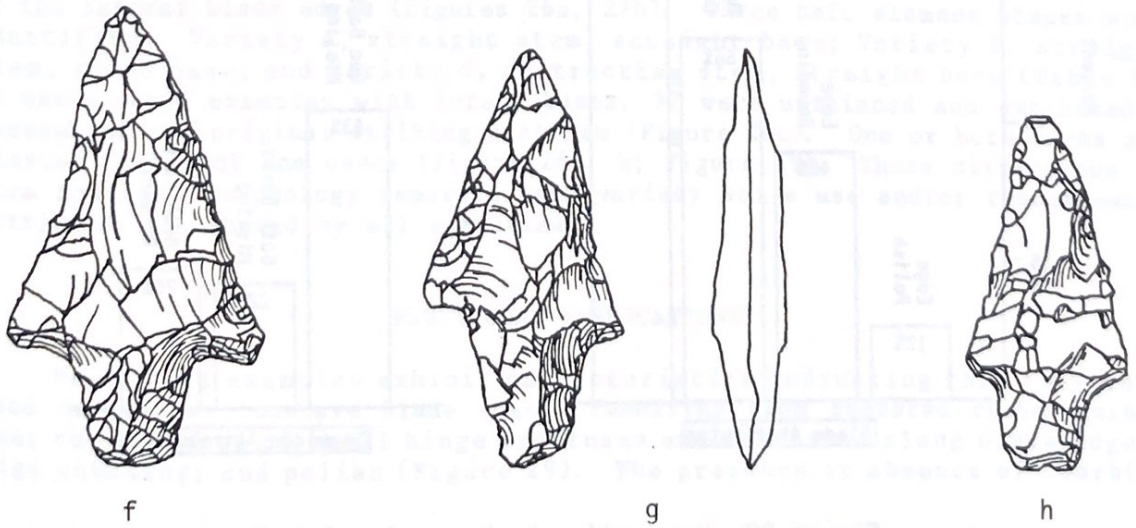


Figure 27

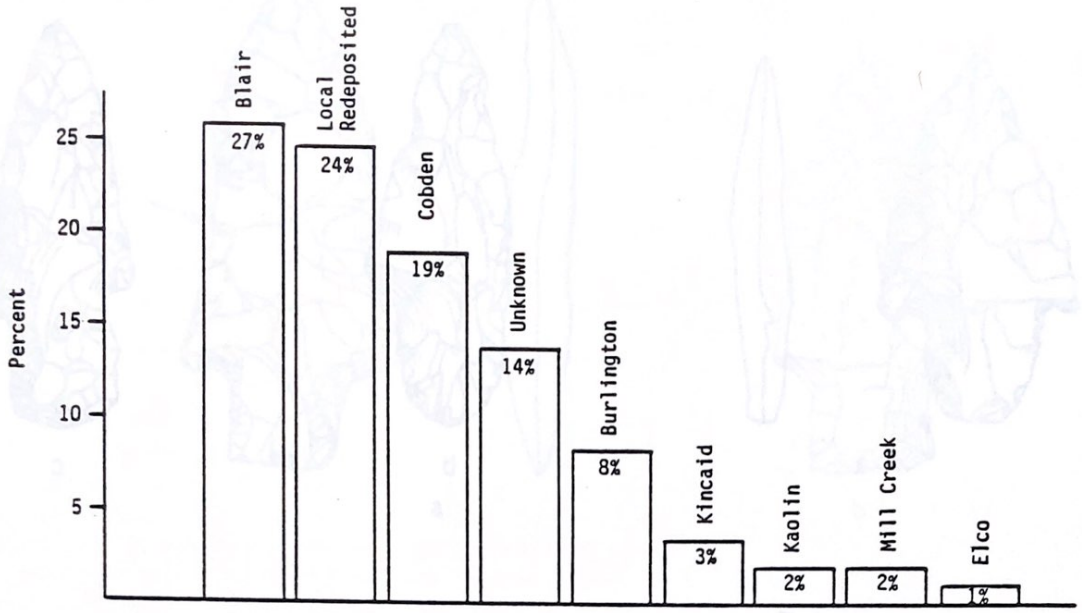


Figure 28. Chert Sources

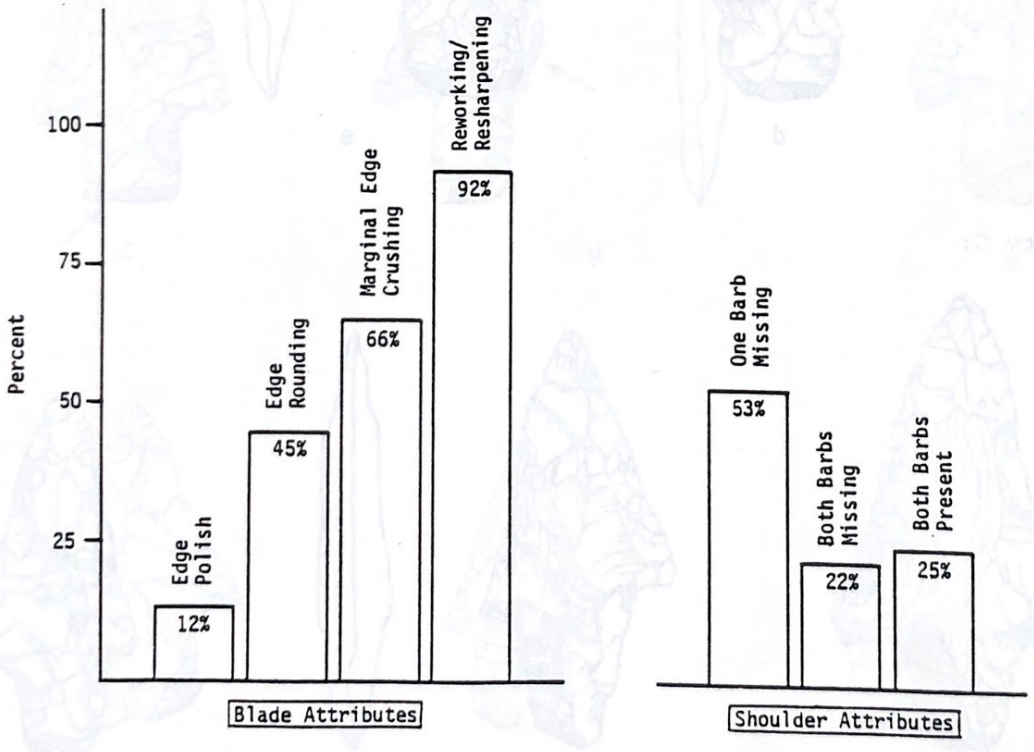


Figure 29. Use and/or Resharpening Attributes

observations included the incidence of edge polish, edge rounding, marginal edge crushing, reworking, and the presence or absence of barbs.

Edge Polish: a fine form of abrasive wear present on some bifacial blade edges, resulting in a smooth reflective surface. This wear attribute is often associated with edge rounding.

Edge Rounding: occurs when a bifacial blade edge is sufficiently worn so that it no longer has the characteristic angular cross section of an unworn edge but becomes evenly curved and smoothly intersects the tool faces.

Marginal Edge Crushing: a wear pattern sometimes observed on blade edges. Crushing appears as minute step fractures which produce an irregular fractured edge and, if heavy enough, a flattened blade edge. This wear pattern is easily confused with and sometimes impossible to distinguish from purposeful crushing as a means of platform preparation.

Reworking/Resharpening: obvious alteration of bifacial blade outlines. This usually results in atypical shapes, incurvate blade edges, and asymmetrical shapes.

Thus, using Winters' and Denny's original varieties as a starting point, morphological, functional, cultural, and temporal characteristics were investigated, resulting in a three-variety Cypress cluster (figures 26 and 27).

DESCRIPTION

The Cypress varieties are typically medium sized, stemmed, and, prior to being reworked, had barbed shoulders (figures 26c, 27a). The blade is roughly triangular but, in most instances, asymmetrical due to repeated resharpening of the lateral blade edges (figures 26a, 27b). Three haft element shapes were identified: Variety A, straight stem, straight base; Variety B, straight stem, round base; and Variety C, contracting stem, straight base (Table 9). Of one-hundred examples with intact bases, 37 were unthinned and exhibited a remnant of the original striking platform (Figure 26c). One or both barbs are missing in 75% of the cases (Figure 26d, h; Figure 29). These differences in stem and base morphology separate each variety while use and/or resharpening attributes are shared by all varieties.

FUNCTIONAL IMPLICATIONS

Nearly all examples exhibit characteristics indicating that they were used as knives: concave blade edges, resulting from repeated resharpening/use; the presence of small hinge fractures and attrition along blade edges; edge rounding; and polish (Figure 29). The presence or absence of barb(s)

Table 9

Metric Observations*

	Mean	Range	s.d.	N
Variety A, Straight Stem, Straight Base				
Length	45.58	31-67	8.01	48
Width	23.84	17-32	3.29	69
Stem width	14.26	11-24	2.50	69
Base width	13.86	11-21	3.06	64
Stem length	13.64	9-19	5.65	65
Blade length	32.06	16-50.5	8.50	48
Thickness	7.99	5-13	4.19	68
Variety B, Straight Stem, Round Base				
Length	48.9	35-63	7.47	24
Width	24.0	30-32	4.42	28
Stem width	14.2	9-18	1.81	29
Base width	13.6	11-19	3.92	27
Stem length	14.8	8-19	2.49	27
Blade length	34.6	20-46	7.56	24
Thickness	8.8	6-16	4.42	29
Variety C, Contracting Stem, Straight Base				
Length	57.6	49-66	6.48	7
Width	27.5	21-34	4.16	9
Stem width	15.0	13-16	.89	11
Base width	10.5	7-12	1.67	9
Stem length	15.7	11-22	3.07	9
Blade length	41.8	35-51	6.17	7
Thickness	9.1	7.5-12	1.37	11

* Maximum dimensions

may be the result of resharpening or use. The rather high incidence of only one intact barb may indicate the way in which these tools were hafted. If only one barb was bound in the haft, the remaining edge could be utilized along the entire length. Another possibility is that the barbs were utilized as a hook for ripping, possibly in the butchering process. The high incidence of local chert suggests that the tool was used by relatively mobile groups which were satisfied with immediately available raw material for tool manufacture. Further, the high incidence of reworking suggests that it was important to use and resharpen the tool until it was no longer functional, possibly reflecting chert availability and, in some way, the nature of exploitive or processing task being performed.

CULTURAL AND TEMPORAL AFFILIATIONS

In southern Illinois, Cypress tools are associated repeatedly with Crab Orchard ceramics. Maxwell (1951:130-132, 200) recovered numerous specimens from the Sugar Camp Hill site and the Raymond site. They were present on the Crab Orchard occupations in the Cedar Creek area (McNerney 1973:444) and were associated with Crab Orchard Fabric Marked without nodes and Sugar Hill Cord Marked in the lower levels of the Grammer Rock Shelter (Cremin 1975:38). At the Jean Rita site (Linder 1974:130) in the American Bottom, similar tools were associated with Marion Thick pottery. Cypress tools occur frequently along the Big Muddy on Crab Orchard Tradition sites (Denny 1972:146; Hall and Elliston 1972:36).

Buck Creek barbed projectile points (Seeman 1975:106-108) are similar to Variety A (Figure 26) and are found in Early Woodland sites in south-central and southeastern Indiana, southeastern Ohio, and northern Kentucky. Seeman (1975:107) also concludes that the tools were used as knives. In the Illinois River valley, similar tools were recovered from the Black Sand component at the Liverpool mound group (Cole and Deuel 1937:140) and are now referred to as Liverpool Stemmed (White 1968:107). Munson (1966:111-120) presents convincing evidence from the Sheets site in the Spoon River valley that Liverpool, Variety A Cypress type, tools often are associated with Kramer points and Marion Thick pottery. Radiocarbon dates for Marion Thick obtained from sites in Iowa, Illinois, and Michigan range from 560-320 B.C. and link these artifacts to the Red Ocher complex (Munson 1966:117). Morphologically, similar tools also occur in the south and southeast. Corrallton, Wells, and Kent points which occur at the Poverty Point site (Ford and Webb 1956:56, 62, 65) lend additional support for a Late Archaic temporal placement of Variety A and C Cypress tools. Recently, straight-stemmed Cypress points were reported for the Late Archaic and Early Woodland levels at the Carrier Mills Archaeological District (Jefferies and Butler 1982:1366-1367) which use assigned dates spanning 3000 B.C. - 500 B.C. Contracting stemmed points, similar to Variety C, have been found in the upper parts of the Late Archaic levels through the Early and Middle Woodland levels (Jefferies and Butler 1982:1366) which have been assigned dates between 3000 B.C. and A.D. 500. The haft elements of Variety B tools are similar to Adena projectile points (Bell 1958:4). Projectile points/knives similar to the Cypress cluster are well

represented at the Late Archaic, Pacific #2 site in the American Bottoms (McElrath and Fortier 1983:105-108).

Based on the foregoing evidence, a high percentage of Cypress tools may represent exhausted or nearly exhausted medium-duty cutting tools which are sensitive indicators of terminal Late Archaic-Early Woodland (Crab Orchard) occupations in southern Illinois. A date range of 1000 - 300 B.C. would seem to represent the greatest period of popularity of the tools. There is little doubt that the tools continued into later periods but declined in popularity as adaptive strategies and technological changes occurred. Functional/ experimental studies involving these implements may lead to a reconsideration of the projectile point designation and shed light on the products man was exploiting and processing with this tool.